

SCIENCE

exploration



DAY
BUFFALO

<http://gse.buffalo.edu/org/sed>

Wednesday, March 16, 2011 • University at Buffalo, Amherst Campus

Featuring
Kristin M. Stanford
Saving the Lake Erie Water Snake



Niagara Frontier
Science Supervisors

New York
Sea Grant

GREAT LAKES PROGRAM
University at Buffalo

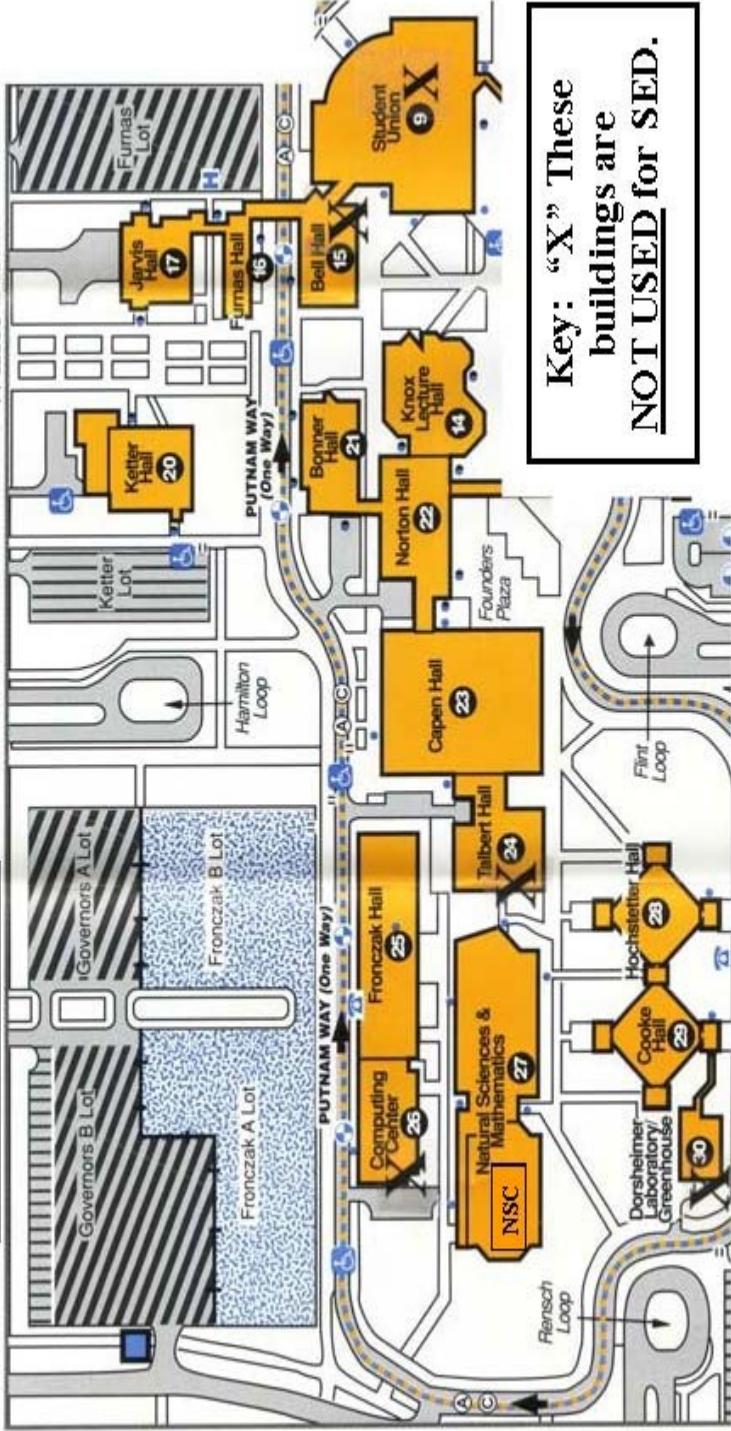
Western Section of the
Science Teachers Association
of New York State

North Campus, University at Buffalo

Website: http://www.buffalo.edu/community/visitor_directions.html

Bus Parking

White Road



Science Exploration Day Committee

The following individuals have generously volunteered their time and efforts to make SED a reality:

Dr. Jeff Arnold, Director, TLQP Project, Daemen College

John Arnold, Artist and educator

Joseph Cozzarin, Buffalo City Honors School (Retired)

Dr. Peter Demmin, Science Department Chairman, Amherst Central High School (Retired)

Helen Domske, Associate Director, Great Lakes Program, UB, Sr. Extension Associate, NY Sea Grant, COSEE Great Lakes

Bruce Donn, Teacher, Kenmore East High School (Retired)

Dr. Rodney Doran, professor of Science Education, University at Buffalo (Retired)

Debra Kieliszek, Science Teacher, Cleveland Hill High School

Dr. Kenneth Licata, Williamsville South High School (Retired)

Kelly Mergler, Science Teacher, Cleveland Hill High School

Donald Pearce, University at Buffalo School of Medicine

Paul T. Ruda, Cleveland Hill Schools (Retired)

Cathy Zawodzinski, Administrative Assistant, TLQP,
Daemen College



*"All my life
through, the
new sights
of Nature
made me
rejoice like a
child."*

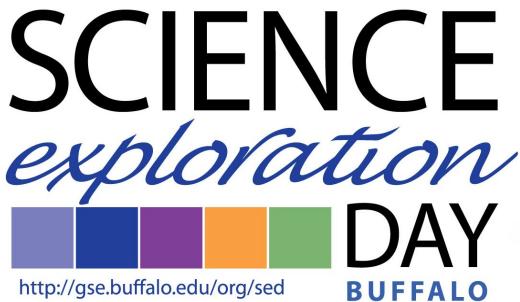
*Madame
Curie*

(Jan Camplin)

S.E.D. Honors Jan Camplin — The Original Organizer

As we celebrate the 25th anniversary of Science Exploration Day, we recognize Janice Camploin as the person who originated the program in Western New York. Jan Camplin was a biology teacher at Lake Shore High School for many years and made significant contributions to K-12 Science Curriculum and Assessment, including work with the NYS Education Department.

Jan Camplin was active in several professional science education organizations, including Niagara Frontier Science Supervisors Association. After visiting a similar science program in Rochester, Jan returned to chair an organizing committee that started SED



Keynote Presentation

All students and teachers will attend this presentation

Saving the Lake Erie Water Snake

Presented by:

Kristin M. Stanford

"The Island Snake Lady"
Lake Erie Water Snake Recovery Plan Coordinator
Ohio State University F.T. Stone Laboratory

Kristin Stanford is dedicated to educating people about the Lake Erie Water Snake (often called LEWS) through scientific research and continued public outreach. Her goal is not necessarily to convert the masses into 'snake lovers', but rather to encourage and promote mutual respect for peaceful co-existence. Her research has even been featured on Discovery Channel's *Dirty Jobs* program!

www.respectthesnake.com

Small Group Presentations



1. Structural Engineering And Earthquake Simulation Tour

*(Tom Albrechcinski, SEESL/UB-NEES Site
Operations Manager, Civil, Structural and Environmental
Engineering, University at Buffalo)*

The Network for Earthquake Engineering Simulation (NEES) laboratory is a part of the Structural Engineering and Earthquake Simulation Laboratory (SEESL). The laboratory is capable of conducting testing of full or large-scale structures using dynamic or static loading. This is enabled by the availability of two shake (earthquake simulation) tables; large-scale dynamic and static servo-controlled actuators; and a 40-ton capacity crane. Participants will hear a presentation describing this very unique facility and observe and example of the nature of seismic testing using a "Mini-Shake Table" prior to the tour of the laboratory.

2. Science in Everyday Life

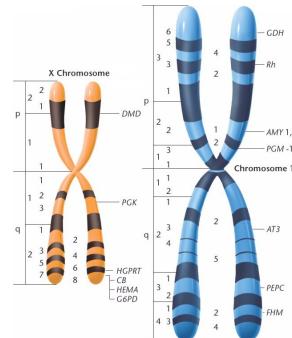
*(Dr. Donald Birdd, Professor Emeritus, Science Education,
Buffalo State College)*

"Touch, Play and Think" about some of the science in your everyday world. All too often we go about our lives not thinking about the principles of science that impact what we do and how we perceive the world. Learn more about how science plays this role in your life, even though you might not be aware of it.

3. Chromosomes and Cancer

(Dr. AnneMarie W. Block, FACMG, Director, Clinical Cytogenetics Laboratory, Roswell Park Cancer Institute)

This presentation will be an introduction to the field of Cancer Cytogenetics. The genomes of cancer cells are very unstable, often characterized by gains/losses of whole chromosomes and re-arrangements between chromosomes. This specialized area of chromosome analysis examines the genetic changes that occur in the cells of cancer patients.

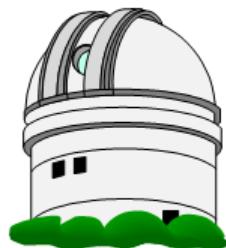


Students will receive instruction in this cutting-edge field of genetics. The relevance of these findings to patient diagnosis and prognosis will be discussed. Students will be shown techniques used in the laboratory and will be given the opportunity to cut-out an actual karyotype.

4. Astronomy: Portable Star lab Planetarium

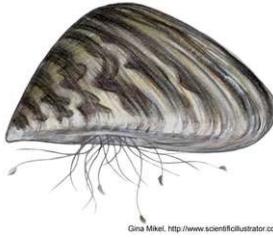
(Tim Collins, Buffalo State College Planetarium)

Finding their way around the night sky via a portable planetarium, participants will observe projections of constellations, stars and galaxies and learn more about the nature of the universe.



5. These are GREAT Lakes!!

*(Helen Domske, Associate Director, Great Lakes Program,
New York Sea Grant)*



The Great Lakes contain 20% of all the available freshwater on earth. Learn about the Great Lakes and some of the fish and creatures that make their home in these "Sweetwater Seas." Preserved specimens will help students learn about some of the exotic invaders of the lakes including blood-sucking lamprey and spiny water fleas.

6. Really Gross Anatomy and Physiology

(Don Gill, Jr., Instructor, Erie County Community College, South Campus)

An interesting laboratory presentation of preserved specimens prepared to various levels of dissection. Comparative anatomy and physiology will be discussed. (Not for the faint of heart)



7. Training and the Role of the Veterinary Licensed Technician

(Kelly Valentine, Veterinary Technician, Medaille College)

Through this presentation students will learn about the role of a Licensed Veterinary Technician. A discussion and demonstration will be offered featuring of some emergency first aid and CPCR measures that all pet owners should know about, along with general animal health information.

8. The UB Motion-Based Driving Simulator

(Dr. Kevin Hulme, Senior Research Associate, NYS Center for Engineering Design & Industrial Innovation (NYSCEDII), University of Buffalo)

Tour NYSCEDII's Motion Simulation Laboratory where students will be introduced to advanced simulation technologies that support research in vehicle and transportation design and in the entertainment industry. Our laboratory fosters partnerships with both academia and industries in Western NY, and is also used for education and workforce training.

Our driving simulator is comprised of a motion-based platform (donated by Moog) and three forward and one rear-view visualization screens, providing passengers with a nearly full-surround field-of-view. The motion platform has a passenger cabin comprised of the front half of a Ford Contour and is outfitted with steering wheel, foot pedals and stereo audio system for event-triggered sound cues.

9. Would You Drink "That"?? The Science and Engineering of Drinking Water

(Dr. James N. Jensen, Professor, Dept. of Civil, Structural and Environmental Engineering, University of Buffalo)



Have you ever wondered where tap water and bottled water come from? Tour the drinking water research facilities at UB to see demonstrations of the science behind drinking water treatment. Find out why prescription drugs may actually show up in drinking water.

10. Dinosaurs — Dominators of the Mesozoic World

(Dr. Richard Batt, Buffalo State College)

Learn about this diverse group of “ruling reptiles” that once dominated the land throughout the ancient world — and today often dominates the popular imagination. This program will include some background information, a variety of specimens for show, drawings, and a Power-Point presentation featuring some famous dinosaur bone and track sites, as well as other interesting aspects of these fascinating creatures.

11. Tour of the Geology Department Research Laboratories

(Dr. Marcus Bursik, Department Chair)

The Geology Department is involved with exploring volcanoes on Mars, cleaning the local groundwater supply, studying coral reefs, understanding volcanic processes and much more. This session include tours of the department's research laboratories. Students will learn about ongoing research activities in the geological sciences area, including state-of-the-art instrumentation.

12. Pharmacy Tour: Prescription for Success

(Cindy Konovitz, Assistant Dean and Patricia Grace, Director of Professional Practice laboratory Operations, School of Pharmacy & Pharmaceutical Sciences, University at Buffalo)

Tour and learn about “Medication Experts” in action. The tour begins in our Pharmacy Museum and Turn-of-the-Century Apothecary, where students will see how pharmacy was practiced during the 1800's and early-to-mid 1900s. “Cigarettes for asthma” a prescription for alcoholic beverages (used during the Prohibition of the 1920s), other artifacts are on display. Students will visit training sites, including a patient discharge room (complete with a “model” patient) and professional practice laboratory, where they will have an opportunity to prepare a simple medication.

13. Electrical Engineering - Interactive Tour with Hands-on Participation

(Dr. Jennifer Zirnheld, Electrical Engineering, University at Buffalo, plus colleagues: Dr. Alexander Cartwright, Dr. Natasha Litchinitser and Dr. Qiaoliang Gan, and students)

Electrical Engineering is an integral part of our lives, contributing on some level to nearly everything we do. Electrical Engineers provide power and energy solutions to light our homes and energize our consumer electronics; develop biomedical instrumentations to save lives; use nanotechnology to produce new materials and devices; provide entertainment with consumer electronics and video games; and advance new green technologies. The tour will focus on interactive demonstrations within several of the research laboratories in the Electrical Engineering Department.

14. Luminol: Shedding Light on Crime

(Dr. Ted Yeshion, Edinboro University of Pennsylvania, Departments of Criminal Justice and Forensic Chemistry)

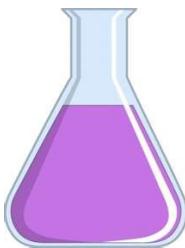
Crimes of violence frequently involve bloodshed. In many of these cases, the perpetrator has an opportunity to wash blood away from the crime scene. Luminal is an extremely sensitive presumptive blood test that can detect trace amounts of blood. This presentation will introduce the student to how forensic investigators use luminal to detect trace amounts of blood and how they are then able to use that information to reconstruct events that may have taken place during the commission of a violent crime. Actual case examples will be used to demonstrate the power of this investigative tool.



15. Tour of Chemistry Department Research Laboratories

(Dr. David Watson and Dr. Troy Wood, Department of Chemistry, University of Buffalo)

This session includes tours of two research laboratories. Students will learn about ongoing research activities in the areas of nanotechnology and bioanalytical mass spectrometry, including state-of-the art instrumentation.



16. Penguins are “COOL” Birds!

(Jeanette Brunner, Educator, Aquarium of Niagara)

This presentation will focus on some of the 17 species of penguins that live in the Southern Hemisphere. From the 4' tall Emperor to the small Little Blue penguins, this program will highlight the biology and natural history of these interesting birds.

17. Tour of the Physics Department Research Laboratories

(Dr. Hong Luo, Professor and Department Chair)

The Physics Department has vigorous cutting-edge research programs in new materials, nanoscience, quantum devices, biomolecular physics, cosmology, high-energy physics, and atmospheric physics. This session includes tours of research laboratories where students will learn about ongoing research activities and state-of-the-art instrumentation.

18. Bird Migration: Why and How Birds Migrate

(Dr. Sara Morris, Professor of Biology, Canisius College)

In this presentation, we will discuss the benefits and challenges of migration and the mechanisms that allow birds to migrate. We will focus on research conducted with undergraduate students at Canisius College, especially related to flight call behavior during migration.

19. Tour of Biology Department's Research Laboratories *(Dr. Stefan Roberts, Dr. Katharina Dittmar, Professors)*

The Department of Biological Sciences is a vital hub of biological research and learning activity. Students will learn about ongoing research activities in the department's laboratories, including state-of-the-art instrumentation.

20. Tour of The Center for Socially Relevant Computing

(Prof. Michael Buckley and Dr. Kris Schindler, Directors, and their students)

Professors Buckley and Schindler will demonstrate how their lab and their students use creative energy, inexpensive technology, and hard work to improve the quality of life of the handicapped, the disadvantaged, medical first responders, nurses and therapists.



21. Veterinary Medicine

(Dr. Kristin Mahoney, VMD, Associate Veterinarian at Brighton-Eggert Animal Hospital with a special interest in geriatric medicine)

Through the use of a case study, students will learn about veterinary sciences and the opportunities available in this interesting and challenging field. Students will see x-rays and materials associated with veterinary science and learn about the role of today's veterinarian.



22. What's New on the Weather Radar Screen?

(Judy Levan, Warning Coordination Meteorologist, National Weather Service)

National Weather Service (NWS) radars are being upgraded to dual-polarization to enhance the ability to collect data on the horizontal and vertical properties of weather (e.g. rain, hail) and non-weather targets (e.g. insects, ground clutter). Learn about the differences between conventional Doppler radar and dual-polarization radar, the benefits/limitations of the new system and what it will mean for the weather forecasts you depend on.

23. Investigating "Paranormal" Mysteries

(Dr. Joe Nickell, Paranormal Investigator, Skeptical Inquirer Magazine)

A presentation featuring a revealing and entertaining look at such mysterious phenomena as the ghost at Mackenzie House and cases of alleged "spontaneous human combustion" - all from the speaker's own case files and all examined from the scientific point of view.

Large Group Presentations



Sexually Transmitted

Infections: The Gift that Keeps Giving

(Beverly Roe, Professor, Erie Community College)

This informative program will provide an overview of both the common and uncommon sexually transmitted infections that young adults should be aware of.

Endangered Species — C.I.T.E.S. Trade in Wildlife

(Michael Muehlbauer, Supervisory Wildlife Inspector for the Upstate NY, U.S. Fish and Wildlife Service, Office of Law Enforcement)

The importation and exportation of wildlife and endangered species is regulated by the USFWS's law enforcement agency. Buffalo is an international border port, where inspectors are responsible for monitoring the international wildlife trade in commercial products. A video, slides and display materials will add to this session.

The Real Science Behind CSI: Applied Forensic Science

(Dr. Ted Yeshion, Edinboro University of Pennsylvania, Departments of Criminal Justice and Forensic Chemistry)

An overview of typical crime laboratory and the responsibilities for each of the sections of the lab will be provided. Discussions will include a definition of forensic science, how different scientific disciplines integrate to assist investigators in resolving inquiries of a legal nature, and examples of crime scene reconstruction. The role of the forensic scientist as an expert witness will also be discussed.

Medical Entomology In Service to the Public

(Dr. Wayne Gall, Regional Entomologist, NYS Department of Health, Buffalo)

Dr. Gall will draw upon case studies, surveillance and his research as Regional Entomologist with the New York State Department of Health to demonstrate how the work of medical entomologists benefits the public and helps protect public health. Deer ticks, mosquitoes, fly larvae that invade living tissue, and bed bugs are some of the arthropods that will be included in the presentation.



The Cold, Cold World of Cryogenics

(Bill Owens, Senior Engineering Consultant for Praxair, Inc.)

Lecture and demonstration on Cryogenics, including oxygen-enriched flammability properties. This session will feature many experiments using nitrogen and oxygen cryogenic liquids to demonstrate both their properties and the effects cold temperatures have on other materials.

Environmental Chemistry in our Community: The Role of Students and Community

Cooperation *(Dr. Joseph Gardella, Jr., Professor of Chemistry and Faculty Fellow, UB Institute for Local Governance and Regional Growth)*

A collaboration of UB students, community members, government and industry have worked to answer questions about pollution in local environments. A review of efforts in three Buffalo neighborhoods will be given, including Hickory Woods and Seneca Babcock, along with successes in citizen design of cleanups on East Ferry. A review of the Niagara County community of Lewiston Porter project will also be given. The ability of the community to understand and participate in the planning, execution and interpretation of scientific results improves the way we deal with environmental issues.