



**Twenty-Fourth
Science Exploration Day
2010**

Wednesday, March 10, 2010

University at Buffalo, Amherst Campus

Featuring

Grand Challenges and Space Exploration

Presented by:

Chris Scolese

Associate Administrator

NASA

Sponsored by:

Niagara Frontier Science Supervisors Association

Western Section of the Science Teachers Association of NY State

University at Buffalo:

College of Arts and Sciences

Graduate School of Education

Educational Technology Services

School of Engineering & Applied Sciences

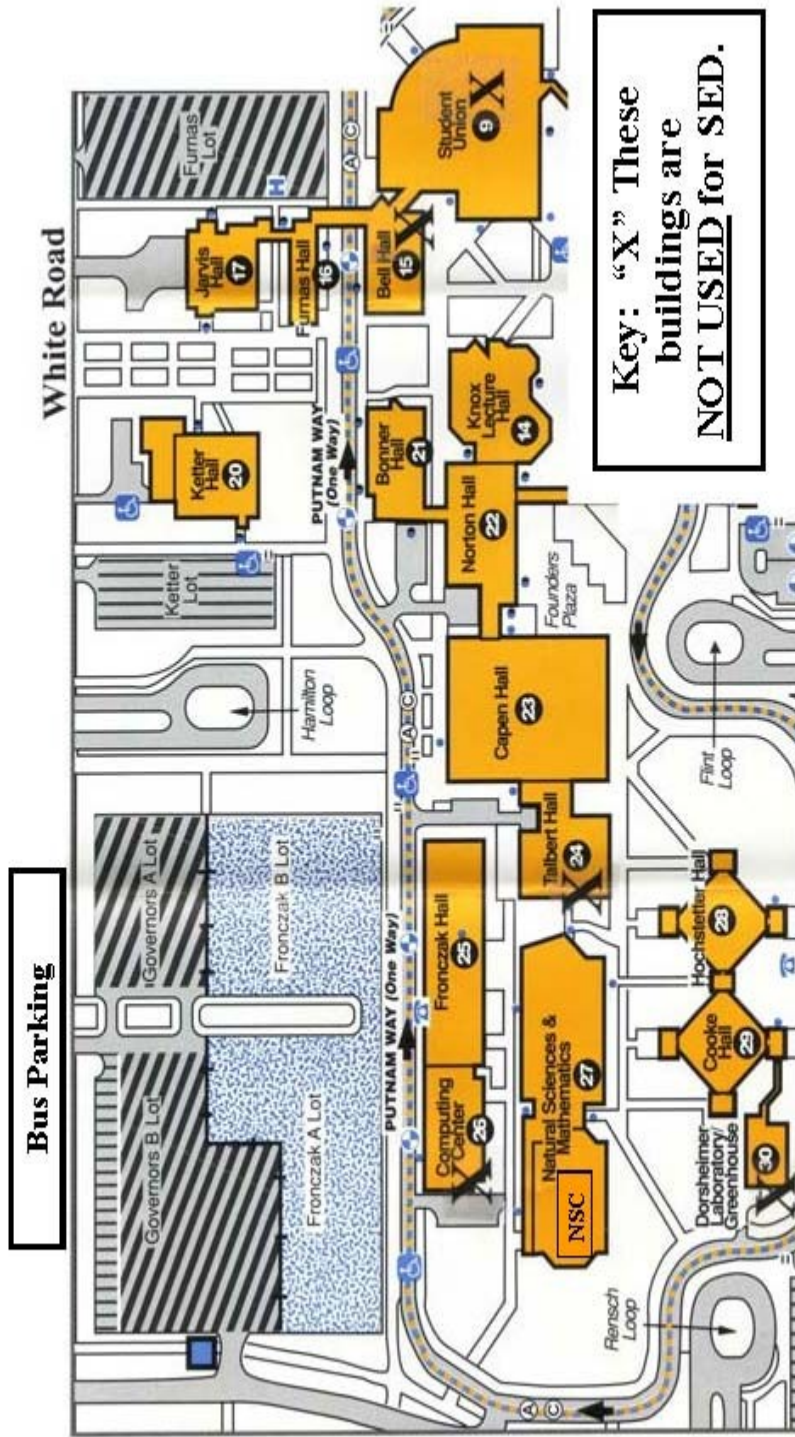
Great Lakes Program

New York Sea Grant

COSEE Great Lakes

North Campus, University at Buffalo

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



Science Exploration Day Committee

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

Jeff Arnold, Director, TLQP Project, Daemen College

Ed Burger, Chemistry Teacher, Amherst Central High School

Joseph Cozzarin, Buffalo City Honors School (Retired)

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

Helen M. Domske, Associate Director, Great Lakes Program, University at Buffalo, 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)



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.

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.

Science Exploration Day 2010

Keynote Presentation

All students and teachers will attend this presentation

Grand Challenges and Space Exploration

Presented by:

Chris Scolese

Associate Administrator

NASA

Understanding the universe, expanding the human presence in the solar system, and improving life on Earth are grand challenges that NASA addresses through its space missions. Join Chris Scolese for a tour of where we have been and where we are headed in space exploration. Students will learn important lessons about human spaceflight, robotic exploration, and Earth observing satellites that are integral to our daily lives.

Small Group Presentations



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.

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.

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

(Dawn Drummer, Wildlife Inspector, US Fish and Wildlife Service)

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 film, slides and display materials will add to this session.

Medical Entomology In Service to the Public

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



Wayne 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 the basis of examples. Preserved arthropods associated with some of the case studies will be demonstrated after the PowerPoint presentation.

Large Group Presentations



Beneath the Seas

(Helen Domski, Associate Director, Great Lakes Program, University at Buffalo, Sr. Extension Associate, NY Sea Grant)

Taking an imaginary journey beneath the sea to learn about the incredible creatures that live in the world's oceans. From the great whale to the colorful fishes of the coral reef, learn about some of these unique creatures and the changes that humans are causing in these watery environments.

Sexually Transmitted Infections: The Gift that Keeps Giving

(Beverly Roe, Professor, Erie Community College, South Campus)

This informative program will provide an overview of the common STI's such as Herpes, HPV and Chlamydia, along with some of the more exotic ones that students should be aware of.

Chromosomes and Cancer

(AnneMarie W. Block, Ph.D., 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.

Engineering: Translating Science to Commercial Products

(Dr. Alexander Cartwright, Professor and Chair, Electrical Engineering and Biomedical Engineering, School of Engineering and Applied Sciences, University at Buffalo)

The important role of science and mathematics in engineering will be discussed. Case studies of basic science discoveries and their role in consumer products will be presented.

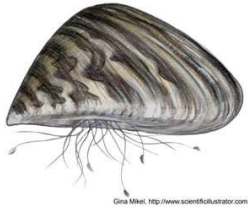
Astronomy: Portable Starlab Planetarium

(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. Learn more about the nature of the universe.

Exotic Invaders Of The Great Lakes

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



Jumping Asian Carp? Beach fouling bivalves? "Ruffe" times for fish communities. Vampires of the Great Lakes? This program will offer a look at zebra mussels, the ruffe, and other exotic species that have invaded the Great Lakes. Learn about blood-sucking

lamprey that feast on trout and other fishes, and what is being done to control these "vampires" of the Great Lakes.

Really Gross Anatomy and Physiology

(Don Gill, Jr., Instructor, ECC South)

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)



The Lure of Certainty: Exploring the Problem of Human Origin

(Dr. John R. Grehan, Director of Science, Buffalo Museum of Science, Buffalo Society of Natural Sciences)

Outlines the historical challenges of how scientists cope with challenges to certainty in science. General examples from fields such as genetics and geology followed by a detailed look at the contradictory evidence from genetics and morphology regarding the last common ancestor between humans and the great apes.

Electrical Engineering - Interactive Tour with Hands on Participation

(Dr. Jennifer Zirnheld, Electrical Engineering, University at Buffalo, plus colleagues: Dr. Anderson, Dr. Whalen, Dr. Yoon, 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.

Luminol: Shedding Light on Crime

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

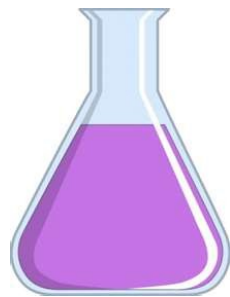


Crimes of violence frequently involve bloodshed. In many of these cases, the perpetrator has an opportunity to wash blood away from the crime scene. Luminol is an extremely sensitive presumptive blood test that can detect trace amounts of blood. This presentation will introduce the student to how forensic investigators use luminol 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.

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



Health Sciences Presentation

(Dr. Ann Wright, Professor of Biology, Canisius College)

How do you determine whether someone is healthy? Insurance companies use body mass index (BMI) to determine health insurance. Is this measure appropriate? Is weight or body fat measurement an appropriate index of health? Why are diets and exercise important measures of health? Are heart rate changes during rest and exercise a good indicator of health? These questions will be answered during the presentation.



Virtual and Rapid Prototyping

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

Tour the NYS Center for Engineering Design and Industrial Innovation. In our Motion Simulation Laboratory, students will be introduced to advanced simulation and visualization technologies that support research in vehicle and transportation design, and in the entertainment industry. In our Design and prototyping Lab, witness a "3-D printer", and related technologies that support prototype and product development in engineering design and manufacturing.

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.



Cosmology

(Prof. Dejan Stojkovic, Physics Department, University of Buffalo)

A presentation on the history and recent developments of cosmology will introduce students to the scientific study of the large scale properties of the universe as a whole. Students will learn more about this interesting area of scientific study.

Veterinary Medicine in 2010

(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.



The Science and Technology of Severe Weather

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

Your Local National Weather Service (NWS) Forecast Office in Buffalo will be presenting information on the Science and Technology of Severe Weather. Students will learn how thunderstorms and tornadoes develop and how do forecasters predict and detect severe storms. You will see some of the devastating impacts that result from these forces of nature. Learn how NWS forecasters assess damage from these events and get to test your skills on making your own damage assessments.

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.

Global Warming: Fact or Myth

(Prof. Michael Ram, Physics Dept, University at Buffalo)

The history of climate going back some two million years will be reviewed. Factors influencing climate, as well as the astronomical theory of the ice ages, will be briefly discussed. This will allow the group to get into the pros and cons of global warming.



CSI: Critter Sign Investigation

(Kristen Rosenburg and Ginger Wszalek, Environmental Educators, NYS DEC Reinstein Woods Nature Preserve)



Learn to read the clues that animals leave behind and solve the nature mysteries in you own backyard. Hands-on investigations will include real biofacts from native mammals, birds, and insects.

Training, Careers and Role of the Veterinary Licensed Technician

(Kelly Valentine and Debbie Piotrowski, Veterinary Technicians, Medaille College)

A presentation to describe what a Licensed Veterinary Technician is and some emergency first aid and CPR measures all pet owners should know will be discussed, demonstrated, along with general animal health issues