

SciMo Says

**The Newsletter for Science in Motion at Susquehanna University
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Dr. Courtney Thomas, Director Says...

Due to budget constraints, we have reduced the **SIM Summer Workshop** from five days down to three days. The new dates for the workshop are **Monday June 15th through Wednesday June 17th**. If you are interested in attending the workshop, please e-mail Melanie at rohrbach@susqu.edu or call 570-372-4779 ASAP!

Teachers, have you ever misplaced the SIM evaluation form after a SIM visit or drop? Do you have every intention of mailing/faxing SIM your completed evaluation, but it somehow manages to get lost? Well we have a solution for you! Teachers are now able to **complete the SIM Mobile Lab Evaluation Form on-line!** Just go to <http://www.susqu.edu/sim/services.htm>. Under SIM Mobile Lab Evaluation (bottom), just click **on-line** and you will be directed to a Survey Monkey version of the form you can complete and submit on-line.

I am continuing to follow the progress of the 2009-2010 PA budget. Currently, the Senate has passed **SB850**. This bill is their proposed 2009-2010 budget. Unfortunately, **SIM funding is NOT included** in this budget. Usually, at this time of year, SIM funding is in the proposed legislative budget. We are still hopeful we may be included in the final state budget, but I am pursuing other options for funding. Many teachers were recently informed that I sent letters to superintendents and have been conversing with those superintendents to see if funding SIM directly through the school districts is a possibility. This is not an option I would even consider if not directly instructed to do so by legislators and the Governor. So far, responses have been mixed. Some superintendents have been very supportive of SIM and are willing to steer money our way if they receive stimulus funds. Of course, superintendents are faced with many decisions regarding their 2009-2010 budgets. Thus, I encourage every teacher who uses SIM to contact your superintendent and let them know you support allocation of district funds to support SIM.

Continue to **send SIM your signed petitions** as well as e-mail/write your legislators and Governor Rendell. Make your voice heard in support of SIM funding!

Madge Schworer, Biology Mobile Educator Says...

May is a great month for Science in Motion. Students are eager to try new activities as the school year draws to a close. In May I first visited with **Pam Ulicny** at **Tri-Valley Junior-Senior High School** with the *pGLO: Bacterial Transformation* lab for her Academic Biology class. This day is always a full one with the various incubations that must be accomplished but students did a great job and honed their technique with bacteria. I spent a week at **Line Mountain Junior-Senior High School** with **Al Zelnick** and his Biology and Applied Biology classes doing *Crime Scene Investigation*. We analyzed fingerprints, looked at hair

samples (is it human or animal?), burned fiber to determine the content (is it natural or synthetic?), performed blood typing, and ran agarose gel electrophoresis for DNA Fingerprinting in the search for the guilty suspect in the untimely demise of Mr. Edward Coli. Next up was a trip to **Selinsgrove High School** with **Paulette Armbruster's** CP and AP Biology classes to do protein extraction and acrylamide gel electrophoresis in *Something's Fishy about Evolution*. Winding up May was a trip to **Milton High School**



Tri-Valley Biology students plate their transformed bacteria in the pGLO: Bacterial Transformation Lab.



Line Mountain students load DNA onto their agarose gel in the CSI lab.

with **Jocelyn Bailey** and **Kathy Bower** to support their school-wide CSI Investigation. Science in Motion provided gas chromatography, pressure plate foot analysis, melt-temp analysis of powders, and DNA gel electrophoresis activities for their crime investigation lab. Always looking to improve our labs, we traveled to Juniata for our annual curriculum workshop. Mobile educators from across the state worked to improve the various lab activities and the handouts for these activities in all the SIM disciplines.

Thanks to all for another terrific year of Science in Motion. Enjoy the last days of school and have a relaxing and revitalizing summer!

Jaclyn Todd, Chemistry/Physics Mobile Educator Says...

Another school year is coming to an end. I would like to say thanks to all of the wonderful teachers who I had the opportunity to work with this year. I look forward to seeing some of you at our annual STEM summer workshop in June.

I began this month with a trip to **Montoursville High School**. **Daniel Tucker** brought SIM into his classrooms to study *GPS* orienteering and topography for science and technology in society using our Garmin GPS units. Then I was off to **South Williamsport**. **Matt Eisley's** chemistry students performed the lab *Pressure Temperature Relationship in Gases* where they study the relationship between the temperature of a gas sample and the pressure it exerts. My next trip this month was to visit the chemistry classes of **Randy Moyer** at **Selinsgrove High School**. He brought SIM into his AP Chemistry classes to

show students the Fourier Transform Infrared spectrophotometers (FTIR's). His chemistry students used the FTIR's to examine organic compounds using infrared spectroscopy in the lab *FTIR of Organic Liquids*.

Brianna Miller's Middletown High School students performed the lab *Gold Nanoparticle Synthesis and Analysis* this month where they investigate the size-dependent properties of gold nanoparticles and the effects associated with adding different substances such as salt and sugar. The *Chemistry Crime Scene* equipment was utilized at **Muncy High School** this month by **Robin Peterman's** chemistry classes who attempted to solve the crime: Who stole the Bucknell Bison mascot uniform? Students performed a variety of crime scene investigations over the course of the week such as melting point analysis, fabric analysis, infrared spectroscopy and paper and gas chromatography using high-tech equipment in a forensic manner. The *Chemistry Crime Scene* lab spent a week with the chemistry classes of **Deb Slattery** and **Erica Merriett** at **Danville High School** as well.

The chemistry students of **Faye Hinson** at **Milton High School** put SIM to use for two labs this month. They performed the lab *Alpha, Beta, Gamma* where they use a Vernier radiation counter to measure the absorption of radiation by air, paper and aluminum. They also performed the lab *Comparing the UVB blocking performance of Sunglasses and Sunscreens*. This lab entices students to discover the UVB light blocking performance of various kinds of sunglasses and sunscreens. They are encouraged to bring in the sunglasses and sunscreens they use to put them to the test. This is a great lab to do right before the summer months approach. Our popular liquid nitrogen demonstrations were performed by **Joshua Greene** of **Bloomsburg Christian High School**. He performed an array of experiments to display cryogenics and made liquid nitrogen ice cream at the end of the show. This lab demonstrates the behavior of materials such as racquet balls, bananas, balloons and metals at very low temperatures. **Joshua Greene's** physics students at **Bloomsburg Christian High School** performed a variety of labs this month. They performed the labs *Momentum, Energy, and Collisions; Energy of a Tossed Ball; Work and Energy; and Impulse and Momentum*. They also enjoyed a trip for *Knoebel's Physics Day* as well.

The other ME's and I then spent the last week of the month up by Juniata College during our annual curriculum retreat at Raystown Lake. Upon returning, I made my last trip of the school year for **Bo Meyer's** students. They utilized our *liquid nitrogen* supply and materials at **Williamsport High School** to investigate cryogenics.

I hope everyone has a great summer vacation!

Mike McDevitt, Mobile Educator Says...

First of all I must compliment **Sheila Furr** and her students in the **Shikellamy High School** Water Quality task force for the ultimate devotion to duty. On Thursday, May 14th they proved to be very dedicated, completing the analysis of **Shamokin Creek** in a drenching downpour. So a tip of the hat and a sincere thank you goes to Shikellamy. On better weather days, the Water Quality van visited **Greg Laubach** and his **Central Columbia High School** students at **Ten Mile Run** and later **Karen Avery** and her **Milton High School** students at **Limestone Run**. I then traveled to **Miller Run** near **Loyalsock High School** where **Sarah Puderbach** and her students completed their water quality assignments.

This is the best time of the year for me as either a classroom teacher or SIM Mobile Educator. I am allowed to do Liquid Nitrogen Demonstration Day! This is one of my most enjoyable days of any school year. Just before Easter Vacation, Liquid Nitrogen Demo Day was enjoyed by approximately 300 students of **Deb Slattery**, **Jack Deal**, **Erica Merriett**, **Brandon White** and **Elena Krick** at **Danville High School**. Later in

May, I was allowed to repeat the day with 150 **Selinsgrove High School** students with teachers **Tracy Hepner, Randy Moyer and Katie Robbins**. In between, **Pam Ulicny** and her **Tri-Valley** environmental science students performed two Vernier Environmental Science experiments, *Acid Rain* and *The Greenhouse Effect*. Then I was back to **Shikellamy** and **Sheila Furr's** biochemistry classes. There we successfully completed Science in Motion's *Fish Protein Electrophoresis* experiment.

As this is the last newsletter of the current school year allow me to say thank you to all the teachers and students in our service area. It proved to be a rewarding year!

Experiment of the Month

Liquid Nitrogen Demo Day

Science in Motion can provide as a visit or an equipment loan all the necessary materials for your classroom to experience **Liquid Nitrogen Demo Day**. Below is a list of Experiments, Demonstrations, and Activities.

Demonstrate Liquid Nitrogen is boiling, 1000 X expansion: liquid to a gas

1. Pour LN into small Dewar, listen and observe the boiling
2. Pour LN into tea kettle, listen and observe the boiling
3. Pour LN into plastic side arm flask with balloon attached, insert stopper/cork
4. Pour LN into 2 liter bottle, insert cork, point in a safe direction

Behavior of Metals in Liquid Nitrogen, Thermal Contraction

Place into the Dewar containing the LN

1. A bell shaped piece of lead (sound changes)
2. A small cow bell (pitch changes)
3. Brass ring and ball
4. A bimetallic strip Al/Brass
5. A spring made of solder
6. In separate containers place small pieces of pipe, Copper and Tin, add LN to the container, observe and compare degree of frost formation on each

Behavior of Food Objects in Liquid Nitrogen

Place into the Dewar containing LN, remove after two minutes then strike with a hammer or throw the object onto the floor.

1. Grapes
2. Strawberries
3. Onions
4. Banana (use as a hammer to pound a nail)
5. Hot Dog

Behavior of Rubber in Liquid Nitrogen

Place into the Dewar containing LN

1. Racquet ball

2. Rubber policeman (chemistry equipment) use as a nail, pound into aboard

Behavior of Chemical Reactions in Liquid Nitrogen

Obtain a light stick, activate, observe in a darkened room, place into the Dewar containing the LN, remove after two minutes observe, possibly comment on the Collision Theory of Chemical Reactions

Behavior of Electricity in Liquid Nitrogen (flashlight bulb)

Connect the flashlight to the six volt battery. Place our Flashlight into the Dewar containing the LN, observe change in light intensity and comment on conductivity of metals in extreme cold.

Behavior of inflated balloons in Liquid Nitrogen

Place inflated balloons into the LN, comment on the consequences.... "Gas Laws"

Behavior of Rare Earth Magnets in Liquid Nitrogen "Meissner Effect"

Demonstrate effect of placing rare earth magnet and a ferrous magnet together. Then place the ferrous magnet into a Pyrex Petri dish, add LN, then place the rare earth magnet upon the ferrous magnet. Observe.

FINALE:

Demonstrate the effect of placing cut flowers into the Liquid Nitrogen.

As a true finale or treat, Science in Motion can provide the equipment and materials for the Mobile Educator or teacher (loan) to produce ice cream using liquid nitrogen as the refrigerant. Just mix equal portions of liquid nitrogen and soft serve ice cream mix and voila; a tasty treat for all! Mix, spoons, cups, and all accoutrements will be provided.



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