

SciMo Says

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

It is that time of year again, **please contact** (e-mail, letter, phone call) **your legislator** and let them know you **support 2010-2011 state funding** for the **Science in Motion** program. We were extremely lucky to be included in the budget this past year, and we need even more help to get in the next state budget. If you aren't sure who you should contact, we have listed the legislators, by school district, on the SIM website (www.susqu.edu/about/SIM.asp).

The **SIM Summer Workshop** has been scheduled for **Monday June 14 through Wednesday June 16, 2010** at Susquehanna University. **Please let me know if any schools are still in session; we can bump the workshop back a day or two if necessary.** We are hosting the workshop in the New Science Building on campus. Teachers will earn fifteen Act 48 professional development hours and a \$150 stipend for attending all three days. A registration form is available on the SIM website (www.susqu.edu/about/SIM.asp) under SIM Newsletters. Please e-mail, fax (570-372-2791) or mail your **completed registration form to me ASAP.** We only have space for twenty teachers!

In April, I accompanied Mr. McDevitt on a visit to **Matt Easley's** class at **South Williamsport.** The students were very excited to perform *FTIR of Organic Liquids*. Also, this month, I joined Dr. Howe for a Water Quality Project visit with **John Hernandez's Sunbury Christian** students at Lithia Springs. The weather was great and the students had fun testing the water quality and searching for macroinvertebrates.



Sunbury Christian students at Lithia Spring Creek with Dr. Howe

We want to hear from you! We need feedback from teachers we serve. **Please fill out the on-line SIM Mobile Lab Evaluation Form** (www.susqu.edu/about/29159.asp) **for every SIM visit and drop.** This Survey Monkey form is quick and provides us with valuable information.

Mike McDevitt, Chemistry/Physics Mobile Educator Says...

Consider a new concept for dealing with PSSA testing schedules! Schedule Science in Motion Crime Scene or a series of GC or IR experiments. Most schools do not allow homework or after school

assignments. A very flexible series of Science in Motion Experiments or Crime Scenes could fit into your topsy turvy schedule. An equipment loan or a visit by a very flexible Mobile Educator might be a productive alternative to your current coping strategies. Just a thought.

The chemistry van has been doing a variety of equipment loans and visits. Chemistry crime scene with new experiments, *Spectroscopy of a Red Liquid* with spectro-vis and *CSI Soil Analysis* was conducted by **Sue Steiner** and her Chemistry students at **Millville High School**. Our Infrared Spectrophotometers traveled to **South Williamsport** and **Matt Eisley's** Honors Chemistry students. They completed our *IR of Organic Liquids* and *IR Spectrophotometry of Fatty Acids* series of experiments. Later, our popular and enjoyable sound labs, *Tones, Vowels, and Phones* traveled to **Shikellamy** and **Colleen Ruths** physics students. Concurrently, **Yvonne Monahan's** Chemistry II students performed a series of radiation experiments, *Characterization of Alpha, Beta and Gamma Radiation, Distance and Radiation*, and our very successful lifetime experiment, *Half-life of Barium-137m*.

An exciting new concept will be tried by several of our teachers. We will be conducting our Liquid Nitrogen Demonstrations and Ice Cream Day outside. Obviously less cleanup, and if Mother Nature cooperates, should prove to a novel approach to presenting the demos. Let me know if you would like to give it a try.

My **available dates for visits or drops** for the remainder of the year include April 30, May 5, 11,12,18, June 1,2 . Hopefully, these openings will allow you to schedule a Science in Motion reservation.

Eric Anderson, Biology Mobile Educator Says...

Does the crime rate in central Pennsylvania fluctuate with the seasons? It must, because there has been a murder in one school district—**Bloomsburg**—and TWO in **Danville Area School District**. Of course real murders have not been committed, only dramatizations with our Crime Scene lab. Not to mention, though we at Science in Motion pride ourselves in professionalism, it would be difficult even for us to resurrect the same Edward Coli each time he was found dead in the classroom.

For more on the Crime Scene lab see the April experiment of the month below.



Danville HS students burning fabric in the Crime Scene lab

Come to think of it, **Line Mountain** also suffered the loss of one Mr. E. Coli. With only one lead investigator, **Mr. Alan Zelnick**, I hope the investigation went well. I was busy leading investigations in two other high schools and prepping the labs. Many teachers took advantage of equipment drops that I always try to fulfill—the aforementioned Mr. Zelnick being one grateful recipient.

Has it really been over a month since I visited the fine folks at **North Schuylkill High School**? With **Mr. Slotterback's** laid back personality, enthusiasm for biology and respectful students I thought

visiting Ashland was to be a high water mark visit—until I found gridlock in the parking lot upon exiting the school after the final bell. A school employee, quickly realizing my dilemma, stopped all opposing traffic, directed the movement of another car or two and cleared my egress almost immediately. Thanks North Schuylkill High for a great visit.

Email me to schedule biology labs. My **open May dates** are 5/7, 5/13-14, 5/18-19, and 5/25.



N Schuylkill students and Mr. Slotterback liked the results of the Crime Scene PCR lab

Dr. Mary Howe, Water Quality Mobile Educator Says...

April was a wonderfully busy month for the SU-SIM Water Quality Project (WQP).

We finished Phase One of the 2010 WQP with a visit to **Johnna Kratzer's** classes at **Juniata High School**. This was our last classroom orientation visit of the year, and students from three classes participated in flow rate and sample collection demonstrations using the pygmy meters and integrated sampling rods.



Juniata HS students with teacher Johnna Kratzer analyzing water quality at Lost Creek

Phase Two of the WQP started when **Mary Dahlmann** from **Shikellamy High School** hosted our first stream-side visit of the season back in March, and even way back then we were very lucky to have great weather for the visit. Our luck was even better with our second stream visit; **Jay McHenry** took his students from **Benton High School** to gather data from Fishing Creek for the 2010 WQP. **John Slotterback** students from **North Schuylkill High School** completed their sample and data collection visit to the Little Mahanoy Creek right on schedule, and we saw our first water penny of the season. We finished Phase Two of the WQP the week of April 19 with stream visits hosted by **John Hernandez** of **Sunbury Christian Academy** and **Johnna Kratzer** of **Juniata High School**. In all, over thirty students participated in stream side visits to collect samples and data on the water quality in our area. In most cases we were able to augment our sample and data collection with direct observations of the benthic macroinvertebrates (we had

some fun kicknetting), and I am happy to report that we observed highly sensitive critters in The Little Mahanoy, Lithia Springs, and Lost Creek. Many thanks to all the teachers and students who have participated so far; the project is going very well.

We are now ready to move to Phase Three, the last of the stream-side visits of the season.

Experiment of the Month

Biology Crime Scene

Is it the best time of the year to fit forensics into the curriculum or is it just that teachers like SIM to come in for several days to relieve them of planning during PSSA testing? Either way, April is unofficially Crime Scene month and we have been having fun with our investigations. Perhaps you have thought of incorporating a Crime Scene investigation into your lesson planning. Let's take a look at what Biology Crime Scene is all about.

In its entirety, the Biology Crime Scene lab includes traditional fingerprinting, footwear impressions, blood typing, hair analysis, fiber analysis and the silver bullet—DNA fingerprinting. All of these can be done in four of five days or your choice of activities can be custom ordered—ala Burger King—to have it your way in a shorter time frame. The infamous Edward (aka E.) coli has been found dead in his classroom, with his cancer cure research still unfinished, and a colored cast of the game Clue are the prime suspects. The suspect list is narrowed with the completion of the various activities until the perpetrator is conclusively identified.

Dactylography, or traditional fingerprinting as it is more commonly known, begins with a brief presentation on fingerprint characteristics and categorization. Students then examine fingerprints found at the crime scene and compare them to prints taken from each of the suspects. With any remaining time, students can then study their own prints either on paper or on a balloon, which is subsequently inflated to magnify the print.



Danville HS student analyses electrophoresed DNA.

According to Edmond Locard, the father of forensics, an exchange of material occurs at each crime scene and footwear impressions are no exception. Students learn that footwear and their impressions are actually more specific than thought and then seek to identify the suspects whose impressions link them with the crime scene.

Now which one of those suspects had a pet? A careful microscopic observation of hairs left at the crime scene and those of the five suspects follows hair anatomy and analysis instruction.

The fiber analysis portion of the investigation involves stereomicroscope examination of crime scene fibers. Further investigation is done by burning the fiber samples comparing flame, smoke and ash characteristics.

Hand me that gel electrophoresis box Watson. What? The multi-day investigation concludes with a discussion of restriction enzymes and DNA fingerprinting followed by gel electrophoresis of crime scene and suspect DNA. The proof is in the pudding only if the pudding is electrophoresed gel. Gotcha!

Cop shows have been around as early as Sgt. Joe Friday on the black and white 50's drama *Dragnet* and if anything viewer interest has only waxed with the incorporation of forensic investigation into more current TV programs. Who doesn't like to see good triumph over evil? Through Science in Motion's Biology Crime Scene lab teachers can bring the silver screen to the classroom and have their students experience a sampling of what real forensic investigators actually do to solve a crime.



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