

SPRING
2010

Mobile Laboratory Coalition



Pitt's Mobile Laboratory 4

The Pitt Mobile Lab and its inaugural year – more than 1500 students and 60 teachers

NC Career Launch Pad 7

North Carolina Community Colleges' BioNetwork gets a facelift and expanded focus

Maintain & Extend 8

Maintaining and extending the life of your mobile laboratory

Mobile Laboratory Coalition 2009 Meeting Update

Moving on down and getting closer

It was a monumental meeting for the Coalition this past June in New Haven, Conn. As one attendee quoted "If you only have two teeth, its better when they are together so move on down and get closer!" And that is exactly what we did, both physically and professionally.

We implemented a new leadership structure to help move the Coalition into a more organized and professional group. These leaders and other Coalition volunteers will work closely over the coming year to update our website, create an interactive Google network for Coalition members, establish 501c3 status, increase communications between members, formalize our financial structure, establish purchasing plans with suppliers, and develop strategic initiatives. This is truly going to

be an exciting year for the Coalition and we welcome any and all participants as we take these fundamental steps forward. A HUGE thanks to our sponsors who help make this meeting possible: American Custom Coach, Farber Specialty Vehicles, OBS, Inc., and Edvotek.

I look forward to working with you over the coming year and welcome any and all comments, concerns and assistance as we work together to further the Coalition and its efforts nationally and internationally! I hope you enjoy the first newsletter and look forward to seeing each of you at our next meeting in Atlanta, Georgia on June 20-23, 2010!

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Towards Mobile Laboratories in Hawaii

The Chaminade University Pilot Project
Lori Shimoda

Chaminade University is a small, Catholic, university nestled behind the slopes of Diamond Head in Honolulu, Hawaii.

Chaminade is a federally designated Native Hawaiian-serving institution with a special mission of outreach to Native Hawaiian and Pacific Islander students. Chaminade is one of the Nation's three most diverse colleges and serves many students from under-represented minorities or who are socio-economically disadvantaged.

Vision: Chaminade has a growing reputation in the biomedical sciences, building on its established prominence as a Forensic Science program. It has an exceptional faculty of teacher-researchers and state-of-the art instrumentation and facilities including newly renovated laboratories for teaching and research. Chaminade's faculty and administration recognize the pressing need in Hawaii, and across the nation, to engage and guide young students into the STEM pipeline. Under the leadership of Dean of Natural Sciences, Dr Helen Turner, and Chaminade University researcher Lori Shimoda, a strategic plan

has been developed to enable Chaminade to contribute to the building of the science pipeline in Hawaii. The defining features of this plan are:

Intervene early: focus outreach programs on elementary schools;

Engage and educate: go beyond purely enrichment activities to actively partner with under-resourced schools to help them deliver curriculum and meet standards;

Sustain contact: repeated visit so that students maintain constant awareness of the excitement of science and encounter role model scientists and undergraduates repeatedly;

Cultural awareness: communicate the relevance and importance of science in a manner that is meaningful to all students.

Implementation: Chaminade has envisaged a two-phase implementation plan. In Phase I a series of pilot activities in Oahu elementary schools are occurring. Here, we take the science to the schools, in the "I am A Scientist" program. This phase is centered on raising awareness, assessing need, gathering data on effectiveness and building a case for state and private funding of Mobile Laboratories. Phase II will be the design, purchase and initiation of a full-fledged mobile laboratory program. To date grant support has been received from the AFRL/Clarkson

(continued) Towards Mobile Laboratories in Hawaii

Aerospace, and white papers describing the program are under consideration by Hawaii's congressional delegation and Office of Hawaiian Affairs.

The Program: On September 15, 2009, Chaminade University unveiled the "I am A Scientist" program to 70 elementary school students and their families at an evening assembly at Moanalua Elementary School in Honolulu. We do not have a "bus", but that did not stop us. We packed everything into vans and drove to the school.

The "Germs On Me" program invited students and families into the world of germs and disease. Participants discovered how quickly disease could spread in a simple exercise of sharing clear liquid from a tube with one another. Of course one unsuspecting person had the "infected" liquid. The students took it very seriously, and were hesitant to share their liquid because they did not want to get infected. After a few swaps, we used a pH color indicator to determine if an individual got infected, and over half the room was infected! Both kids and adults were amazed.

Dr. Helen Turner, Dean of Natural Sciences and Mathematics, and an Immunologist utilized student volunteers dressed as germs, fungus, and parasites to demonstrate how a father's (another volunteer) immune system protects the body from the many germs we come in contact on a daily basis.



Then students performed their own bacterial experiment by making hand prints on an agar dish, followed by a second hand print after either washing their hands with water, gel sanitizer, or with antibacterial hand wipes. Their third hand print was made after Dr. Stephanie Genz, Associate Dean of Nursing demonstrated and discussed proper hand washing techniques. Students studied sample plates prepared earlier by Chaminade University student volunteers with microscopes.

A few days later, we returned to Moanalua Elementary School with microscopes and the agar plates prepared by each student. Students along with their parents were able to see what grew on their hands, how the first hand washing affected the bacteria on their hands, and finally the effect of proper hand washing. There was lively discussion, many unexpected results, and proud students.

I am A Scientist is focusing our efforts on the elementary schools of Hawaii. When asking a young person "what do you want to be when you grow up?" few say scientist because they have never met one. We hope to change this.

Collaborating with the Chaminade University faculty, staff and students, we are able to bring a science experience to our youth. Student service club members provide instruction and serve as role models for the student participants. Our program will include Health Science, Biochemistry, Genetics, and Forensic Science. We provide assembly style, and grade level classroom based programs.

To evaluate our program we prepared a pre and post program student survey. We are currently analyzing the data and will report back. All students reported a statistically significant increase in their awareness and excitement about science. We are encouraged and please by the many positive comments from the participants, the parents and the school. The kids liked being able to keep their lab coat and thought the microscopes were cool, and both kids and parents highly valued having the personal attention of the Chaminade University student volunteers.

Contact

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2010 Mobile Lab Coalition Annual Conference Update

Georgia State University, Atlanta, Georgia, June 20 – 22, 2010

The MLC Conference, **hosted by Georgia State University's Bio-Bus Program, will be held on June 20 -22 in Atlanta, Georgia.** The agenda includes plenary sessions, panel discussions, workshops and vehicle tours. Featured speakers will include Dr. Tony Beck of NIH-SEPA and Dr. Cinda Herndon-King of GeorgiaBio.

Watch your inbox for registration information in the upcoming weeks. The event will be limited to 100 participants.

The conference hotel is the Residence Inn by Marriott Atlanta Downtown (www.residenceinnatlanta.com). A limited number of rooms is being held at the conference rate. **Attendees may call 1-800-331-3131 for hotel reservations by May 14, 2010 using the code "Mobile Lab Coalition."**

There are many different opportunities to participate in this year's conference. For more information please see the call for submissions (included with this

newsletter). All information requests, workshop proposals, Share-A-Thon submissions, and vehicle tour proposals should be sent to:

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The Pitt Mobile Lab has its first "overnighter"

The Pitt Mobile Lab has had a busy inaugural year. It hit the road in January 2009 and in five months welcomed 61 teachers and 1641 students aboard to roll up their sleeves and work one-on-one with real scientists doing real science.

September 26 and 27, 2009 marked another milestone for the new mobile lab. The program traveled to two schools near Erie, Pennsylvania, over 100 miles to the North of Pittsburgh, to work with students and teachers who took part in summer workshops offered by the Department of Biological Sciences. While it is common for the Pitt mobile lab to spend multiple days at a site, this visit marked the first time faculty and staff had to also stay away from home due to distance. The Pittsburgh team is thrilled because they can now work with schools

that were previously beyond their reach. This trip is significant because it represents the first step in developing regional rather than local science education effort.

The mobile lab is run as a partnership between University of Pittsburgh Department of Biological Sciences and University of Pittsburgh Clinical Translational Science Institute. Community Partners include the Pittsburgh Life Sciences Greenhouse, The Lyceum Group, Pittsburgh Tissue Engineering Initiative, and Thermo Fisher Scientific. The Outreach Program of the Department of Biological Sciences receives programmatic support from HHMI and a SEPA award from NCRR, a component of the National Institutes of Health. The vehicle was purchased



through a Clinical Translational Science Award from NCRR, a component of the National Institutes of Health to University of Pittsburgh CTSI.

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What was left of MdBioLab's two forward air conditioners after a visit with a short bridge



Teaching an old dog new tricks

Brick and mortar laboratories (seem to) stand the test of time – but can a mobile laboratory?

Jennifer Colvin
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Since we first launched the MdBioLab in January 2003, I have owned four cars.

That sentence probably made my Executive Director wonder if he should trust me with anything of value. But if you look into the details you would learn that the first car had 150,000 that month and I logged an additional 20,000 in the next six zipping my way across Western Maryland. The second car met an early demise. The third car was reappointed to another member of the household when her vehicle met an early demise. I've had the fourth car for the last three years and I'm not giving it up anytime soon.

Back to the original point – four cars later and we're still hauling MdBioLab from county to county each and every school week. We've had our bumps and bruises (two new generators and an incident involving a short bridge and a tall trailer), but the floor is still there and the lights work great.

Mobile units may have a sales pitch of a "laboratory on wheels," but similarities end with the word laboratory. Falling temperatures leave directors dreaming about antifreeze, and technology

advances leave instructors pining for anything half as nice as what they have in the office.

We all field questions about how to build a unit (and daily face challenges of how to fund a unit), but few ask us how to *maintain* a unit. Yet the maintenance piece is critical to keep your mobile unit running.

Each and every piece of equipment in (or on) your mobile unit has a specified maintenance plan – and they're not just suggestions. Working for a mobile laboratory program is more than teaching and funding. We are also facilities managers and equipment specialists. If your program is fortunate enough to have its own facilities department, cheers. We're all jealous. If your program is similar to mine with three team members total, keep reading.

Stuff happens. It always will. Accidents. Vandalism. "I forgot to...." Having a plan and working as a team to prevent and respond is your program's best defense. Make a maintenance plan with your vendor or service provider. Stick to the plan. Become a fortuneteller, look into

the future and predict what potential potholes lie in your path.

The best way to be prepared of course is preventive maintenance.

Speak with a qualified service provider about generator maintenance and create a plan. Call your local RV dealer and set-up a time to stop by and discuss your vehicle and winterization. Develop appropriate security plans and work with a vendor if necessary.

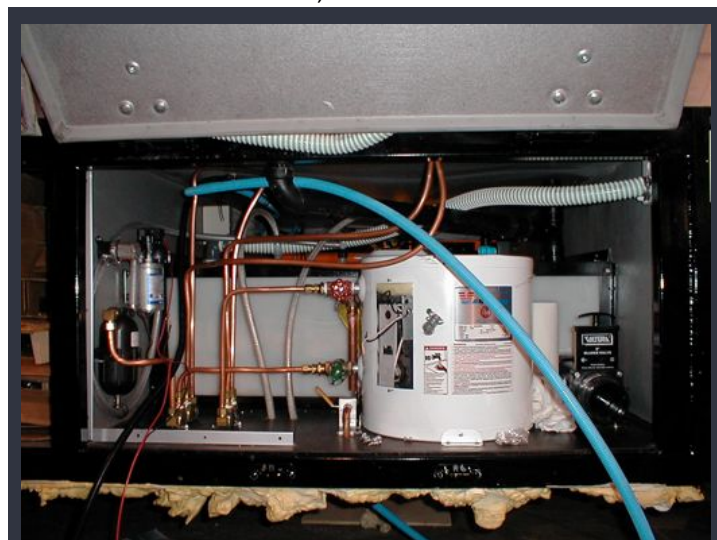
Have staff become familiar with the vehicle. Programs with frequent turnover can suffer from information leakage – a little bit gets lost along the way. Create a document, video or some other form of communication to help new staff members learn about the vehicle, its limitations and how to keep it running.

Technology will always be hard to keep up with. However, think about what's really necessary and what will enhance your students' experiences. Always consider upgradable units when you purchase new technology to help them last longer.

Portable media players may negate the need entirely for DVD players, VCRs (yes,

(continued) Teaching an old dog new tricks

MdBioLab had a VCR), and tape decks (we had that too). Recently, we took out most of the media components that were taking up valuable real estate in a cabinet and replaced it with a popular 2.4" x 4.1" media player that outputs video and audio (I'm not getting any advertising revenue here but the engraving was free). Not only can we play our favorite episodes of a popular primetime forensics-based crime show, but also we



Leaving water to freeze in your vehicle's pipes is a recipe for disaster. Work with your vendor or a local RV service shop to create a winterization plan that work for your program.

can download online videos, make our own slide shows for community events and we look cool.

Connecticut's BioBus recently improved its audiovisual system to include eight 15" monitors in better locations, smart technology, video switches to ease the monitor input and a microphone system to enhance the teaching capabilities. The upgrade, just shy of \$20,000, allows instructors to efficiently integrate audiovisual into their teaching, even from a camera in the back of the vehicle to aid demonstrations. The vehicle also has network capabilities.

BioBus hit the roads in 2001 and according to Director of BioBus Educational Programs Sarah Berke, Ph.D.,

the bus is in great shape 35,000 miles later. "We've had to replace the things you would expect like brakes and a new exhaust system but the vehicle is doing great," said Berke. She said that one of the biggest things she tries to do is schedule school visits geographically close to each other to limit travel on their vehicle.

Berke says that the most important lesson she's learned is to have a preventive maintenance plan of what needs to be done and when. She urges programs to not leave new staff figuring out how to sink or swim alone.

Berke is working to "get the basics in place" by

implementing standard protocols for teaching, laboratory safety, scheduling visits, and vehicle maintenance with her team. She says that not only will the protocols

help current staff, but also will aid new staff each time they arrive to better learn the program and the vehicle.

The program is also working closely with a professional mechanic to develop a concrete preventive maintenance plan. "It's important to have a good mechanic who cares about the vehicle and program and considers the mission," said Berke when compiling a preventive maintenance plan.

BioBus is expanding to elementary classrooms with a new vehicle that will have Wi-Fi capabilities. Many of the students served by the new program do not have computers or Internet capabilities in their schools or homes. Berke said the Wi-Fi capability is a huge

advantage because it decreases the wiring in the vehicle.

I could go on for quite some time about preventive maintenance – but I'll leave that to the professionals. Please see Paul Trenta's article on maintaining and extending the life of your mobile unit.

I suggested in the headline that you might be able to teach your mobile unit new tricks. The best example of this may be the University of Pittsburgh's (Pitt) Mobile Science Lab. Virginia Tech previously owned their unit, which Pitt purchased in 2008 and had it up and running in 2009.

Alison Slinsky Legg, Director of Outreach Programs for the Department of Biological Sciences at Pitt said they haven't done any major updates to the unit besides removing two chemical hoods but they are considering installing a smart board or some system to facilitate their teaching.

"Virginia Tech put a lot of thought and energy into updating the vehicle for themselves over the years. These modifications aren't in the factory manuals," says Legg. For example, they added a hot water heater to make doing dishes easier and modified the electrical system to include surge protectors.

Legg said that although the mobile unit has been a huge learning experience, VA Tech's time and energy has made it much easier. "The folks at Virginia Tech were gracious enough to spend time walking us through every inch of the truck and have continued to be a resource," she said.

Most things have a life span and everything will at some point need to be updated. MdBioLab recently had a new paint job (moisture = rust) and vinyl wrap (most manufactures say the expected lifespan of a wrap is five years). BioBus upgraded their audiovisual technology but still has to buy brakes once in awhile. Pitt picked up a used mobile laboratory and hit the roads with it just a few months later.

How you get there is up to you.

North Carolina Community Colleges Unveils Career Launch Pad

With funding from Duke Energy's Community College Grant Program, the North Carolina Community Colleges' BioNetwork Mobile Laboratory is getting a facelift and an expanded focus. The Career Launch Pad will continue to emphasize biotechnology while extending its outreach to include healthcare, aerospace, and green technologies.

This 40-foot long, 12-foot high, and 11-foot wide educational lab will travel across the state highlighting hands-on scientific demonstrations and activities as well as computer-simulated learning stations to introduce high school and community college students to potential educational and career paths in science, technology, engineering and math-related industries.

The grant funding from the Duke Energy Community College Grant Program will allow the Career Launch Pad to visit schools, community and economic events, career fairs, and more where North Carolinians can experience the Launch Pad's activities and get questions answered about the type of education needed for prospective careers. The ultimate goal is to help revitalize interest in careers in advanced manufacturing and promote new careers in energy, life sciences and other high tech industries across the state.

"Our colleges have long had a focus on technical education but, for a variety of reasons, students seem to be losing interest in these critical careers," said Dr. Scott Ralls, president of the NC Community College System. "Duke Energy's injection of resources allows us to create the environment and tools that generate interest among both young people and those changing careers. The Career Launch Pad's slogan is 'Launching Bright Futures,' meaning a bright future for employees and employers."

"Duke Energy is proud to partner with NC Community Colleges. Our \$14 million grant program is designed to extend their expertise in training workers for vital careers in our state. The mobile launch pad is an innovative way to promote jobs and industries that are an essential part of North Carolina's future," said Brett Carter, President, Duke Energy Carolinas.



The Career Launch Pad will be set up at each event for one of two types of tours. One would be an awareness visit during which individuals would tour and spend a brief amount of time on the bus while they attend community and economic events or career/job fairs. The second type of tour will provide more opportunity for students to spend time involved in scientific activities and computer simulation programs that explore a variety of career focuses. No matter what kind of stop the Career Launch Pad makes, North Carolinians of all ages will benefit from stepping on board and finding the fun in science, technology and potential careers.

For information on when the Career Launch Pad go to www.bionetwork.org and access the BioNetwork calendar. Or go to the www.launchingbrightfutures.com web page for more information.

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Mobile Laboratory Coalition 2010 Meeting
Georgia State University, Atlanta, GA, June 20 – 23, 2010
Agenda, registration & more: www.mobilelabcoalition.org

Maintaining and Extending the Life of your Mobile Lab

Paul Trenta
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In today's economic climate, stretching your resources has become a necessity, especially when it comes to big ticket items like your Mobile Lab/Classroom. As is the case with any lab facility, a constant vigilance is required to keep all systems in ready working condition. The challenge of caring for a mobile lab facility brings with it some additional issues that demand your attention. That said, with some basic common sense and a little effort, caring for and extending the life of your classroom on wheels is not as daunting a prospect as it might seem.

Maintenance, Moisture and Mothering

We can call these the M&M's, or 3M's or MMMnemonic's but they are the keys to keeping your program on the road. Maintenance speaks for itself; from mechanical systems to paint to hardware, keeping after it with a regular preventive maintenance program will yield the biggest payback. Moisture is the killer disease for all things mobile. Finding and fixing leaks or sources of condensation is not to be taken lightly and can keep small problems from becoming large ones. Lastly, Mothering is the tie that binds; it's thinking about the welfare of your "child" all the time and doing all the little things that make life easier and the future brighter. (OK, it's getting a little thick here but you get my drift.)

Maintenance

There are books written about vehicle maintenance, RV maintenance, plumbing maintenance etc. so there is no point in going into detail here; what I will tell you is the most important issue to do with maintenance is record keeping. A log should be kept and regular inspection of key components should be

performed and noted. As a Navy veteran, who was charged with maintaining an engine room, as well as shipboard air conditioning and steam heating systems, I was thoroughly indoctrinated into the world of the Navy's Preventive Maintenance System (PMS). It's a matter of conducting the necessary tasks to keep a ship afloat and running for - in the case of an aircraft carrier - up to 50 years. Your Mobile Laboratory has more in common with a ship than you might think and the systematic approach to keeping it on the road (afloat) and running could and should be the same. There is no magic bullet, unless it is this - regular inspection and prompt correction of items found to be in disrepair. OBS INC. provides a comprehensive maintenance check list that addresses most conceivable components on your vehicle or trailer. Give us a call and we'll provide you a copy to get you started. Add any unique or unlisted items that your unit may have, to round out your list, and you will have a strong PMS foundation. Most, if not all, items on your checklist can stand to be checked/operated/actuated or cleaned and lubricated as an M1 - or monthly/once (as opposed to D1, Y1 etc.). As you become more familiar with the systems and their requirements and specific wear and tear, you can change the interval for inspection or preventive maintenance as you see fit. The key is constantly keeping a lookout -rather - "Mothering". Here's a chart for a maintenance schedule for your generator; which is probably the single most maintenance intensive (and overworked) piece of equipment on your vehicle.

Moisture

Moisture is the bane of the specialty vehicle and may be the biggest contributor to its early demise. Keeping your vehicle high and dry is a must for long life. CarFax has become a standard in the used car industry, especially in this post Katrina world, because of vehicles subjected to flooding being resold to unsuspecting buyers. Water wreaks havoc on electrical systems, accelerates corrosion and rotting and will expand and contract under freeze/thaw conditions - all bad things. Any suspected leaks need to be addressed post haste. Condensation that presents itself from sources like onboard refrigerators or roof mounted air conditioners is a leak and needs to be found and fixed. Spray foam insulation is an excellent inhibitor of condensation - fiberglass, fiberboard or mineral wool batting for wall or ceiling insulation will allow condensation to form on the interior skin of the vehicle, which will wick into the insulation and render it useless as well as leading to corrosion issues. If you are thinking of a new unit, don't skimp here; if you don't currently have spray foam there isn't much you can do but to be aware. We've seen condensation drip into electronics where we had to

MAINTENANCE PROCEDURE	MAINTENANCE FREQUENCY							Page
	Every Day or Every 8 Hours	After First 20 Hours	Every Month	Every 50 Hours	Every 150 Hours	Every 250 Hours	Every 450 Hours	
General Inspections	X							3-2
Check Engine Oil Level	X							3-3
Clean and Check Battery			X ³					3-5
Clean Spark Arrestor				X				3-6
Change Engine Oil		X ¹			X ^{2, 3, 4}			3-4
Replace Air Filter Element					X ²			3-5
Clean Engine Cooling Fins						X ²		-
Replace Spark Plug							X ⁵	3-6
Replace Fuel Filter							X ^{5, 6}	-
Adjust Valve Lash							X ⁶	-
Clean/Replace Cylinder Head							X ⁶	-

1 - As a part of engine break-in, change the engine oil after the first 20 hours of operation.
 2 - Perform more often when operating in dusty environments.
 3 - Perform more often when operating in hot weather.
 4 - Perform at least once a year.
 5 - Perform sooner if engine performance deteriorates.
 6 - Must be performed by a qualified mechanic (authorized Cummins Onan dealer).

(continued) Maintaining and Extending the Life of your Mobile Lab

scrape away the foam to inset the component – it's a very real thing. If you have a leak issue and you can't get to a body shop immediately, here are some tips to protect you in the interim.

- **Simple emergencies**—broken window, tear in skin or roof, cracked vent cover, etc. Most of these can be temporarily patched with "aluminum duct tape."
- **Aluminum (AL) duct tape** is aluminum tape with a peel-off sticky back (from building supply stores). If you put it on a reasonably clean, dry surface, it'll work for months.
- **If you've cracked an air conditioner or vent cover and need to cover it completely.** Use cardboard covered with heavy duty aluminum foil (or use

more layers of the cheap stuff) and sealed with the Aluminum duct tape. Place the box over the unit and seal it to the roof with more of the Al duct tape – then get thee to a body shop as soon as you can. Another great temporary cover is a Rubbermaid like storage bin – flipped upside down and sealed with tape.

- **Kool Seal brand Kool Patch-White Patching Tape** (Kool Seal # 40-321-T from any RV store) is another product that can come in handy for emergency fixes – it works on wet surfaces, but be careful with it, it's very sticky and can make a mess.

As my wife has said "If I say I agree will you stop already", but the point is made, keeping after moisture is important and

the key is always being on the lookout – err rather "Mothering" once again.

A couple words about the coming cold weather season: If you are using your plumbing system make sure you are using freeze protection: shoreline plugged in and heaters on, even to the point of keeping a heater running inside the unit if you can. If it's being stored for any length of time and there is no electricity to activate tank or space heaters you will need to drain the system and/or add antifreeze for potable water systems. Keep your battery charger on whenever you are plugged in or running the generator – and keep your chassis and coach batteries clean and corrosion free.

Remember and apply the 3M's and you too can extend the service life of your vehicle.

Mobile Laboratory Coalition Digital Library

A user editable website to facilitate information, sharing & creativity within the MLC

The **MLC Digital Library** is now live and accessible on the web via members.mobilelabcoalition.org. A user editable site for MLC members, the site is philosophically similar to Wikipedia and other 'wikis': its purpose is to facilitate information, sharing, and creativity within our community.

Resources on the MLC Digital Library include a vendor directory, example curriculum and activities from members, sample budgets, sample evaluations, FAQ on starting a mobile laboratory, working groups and everything else the community creates. Access is gained instantly through your membership in the MLC.

Besides being user-friendly, one of the advantages of the platform we chose (Google Sites) is an extensive

set of help pages found online at sites.google.com/support/. You can always find these help pages by clicking 'help' in the upper right corner of any MLC Member's Site page. And remember, the sandbox is there for you to play around in and to get your feet wet without worrying.

This resource will be most useful when members contribute. One great way to keep 'in the loop' is by 'subscribing to page changes'. This is an option that allows you to receive email updates whenever a page is updated, so you can easily keep up to date with activity in the working

group you're involved with. You can find this tool and more in the 'More action' menu located on every page.

The Mobile Lab Coalition will become a more effective, democratic, member driven organization on this platform. Existing members will easily organize information and give feedback on working group progress, and new members will find it much easier to quickly plug-in and contribute to our community.

Learn more about becoming a member of the MLC in the membership brochure included with this newsletter.

Where do you find the Mobile Laboratory Coalition online?

www.mobilelabcoalition.org
members.mobilelabcoalition.org



St. Cloud State's Science Express

Engaging and exciting students about science through hands on activities with research level equipment and facilities

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A laboratory on wheels hit the road in September to bring hands-on science experiences to K-12 students at schools throughout Central Minnesota. The lab, launched by St. Cloud State University, offers equipment and experiments designed to attract young people to STEM careers. With the mobile lab, local educators will be able to cover such topics as Lyme disease, oil spill remediation using oil-eating bacteria, DNA profiling, cardiac physiology and laser optics.

Science Express is a 53-foot trailer with 350 square feet of laboratory space and 160 square feet of conference space. The mobile unit can accommodate up to 36 students at eight workstations.

Sixty-two percent of Minnesota schools have fewer than 100 students in their graduating class, representing a significant infrastructure challenge for Bioscience training. Science curriculum in these schools is often instructor-limited with a single teacher responsible for teaching modern biology, chemistry and physics. The Science Express will visit 20-25 schools per year, spending one week at a middle school or high school campus (grades 5-12) before moving on to the

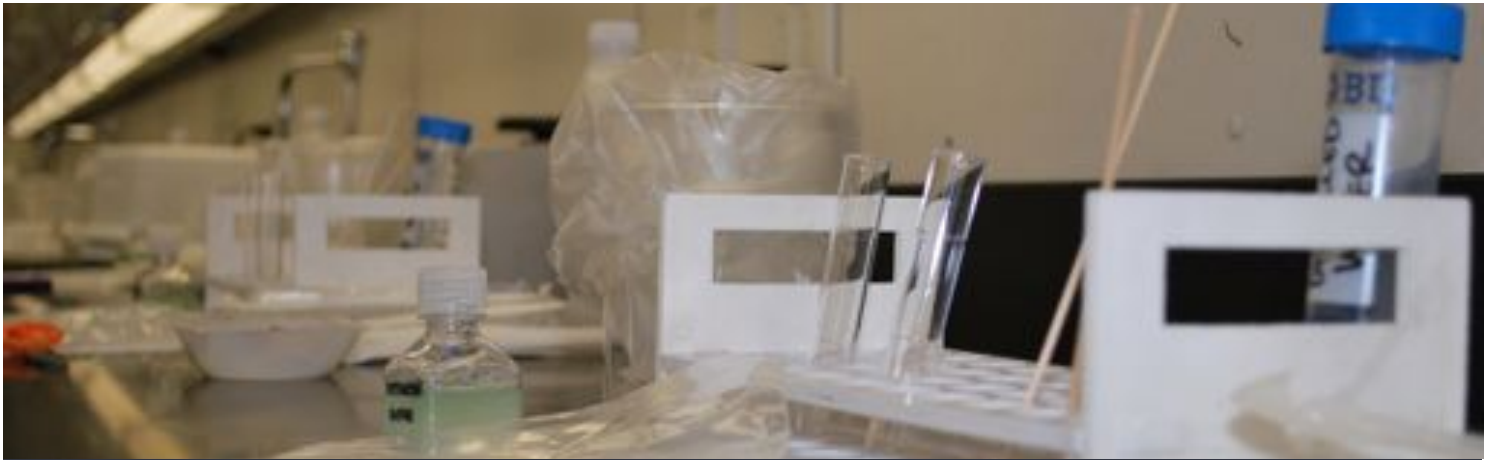
next school. It will host professional development workshops for teachers during the summer months.

The program will provide elementary, middle and high school educators with current information, teaching techniques and hands-on experience in biotechnology through relevant, inquiry-based experiments. The program will also generate student interest and excitement in bioscience, encouraging them to choose bioscience careers. The program also will reach out to the public to generate understanding, enthusiasm, and support through bioscience. Finally, the program will develop a Strategic Alliance for Bioscience Research and Education that leverages Minnesota's Bioscience community, and MnSCU's capacity to support statewide bioscience outreach to invite, engage, and inspire Minnesota's future scientists.

Science Express is intended to enhance the science curriculum of schools that don't have the equipment or infrastructure to provide such training. The trailer provides each school with a state-of-the-art laboratory, meeting space and a fully integrated audio/video

system with VHS/DVD, wireless network, satellite Internet and two 42-inch plasma television screens. Among the 10-12 schools the Science Express will visit during fall semester are Independence Elementary in Big Lake, Salk Middle School in Elk River and Yellow Medicine East High School in Granite Falls.

The project was given a \$50,000 kick-start with a donation from the Morgan Family Foundation, Yellow Springs, Ohio. A K-12 outreach grant of \$200,000 from the Minnesota State Colleges and Universities Bioscience Initiative; participation by the Anoka-Ramsey, St. Cloud, Ridgewater and Minneapolis community and technical colleges; and private donations are supporting the effort. The trailer was donated by Medtronic, Minneapolis-based global leader in medical technology, and retrofitted with the help of Innovative Laboratory Systems (Rockford, MN), which provided laboratory casework; 3M, which provided the wrap material; and Everything Signs (Holdingford, MN), which produced the attention-getting exterior graphics.



Mobile Laboratory Coalition: Moving on down and getting closer

I hope you enjoyed the first edition of the Mobile Laboratory Coalition (MLC) newsletter. Each edition of the quarterly newsletter is available to all MLC members.

We are always looking for article ideas, submissions and program updates. The next newsletter will be published in June 2010. Please contact me with any suggestions, comments or content!

The MLC Volunteer Leaders will be expanding online resources and benefit programs for member organizations in the upcoming months based on your comments and feedback during Town Hall sessions at the Annual Meeting. Please visit our

website for more details and keep those comments coming!

If you would like to play a bigger role in the MLC, have more input or want to meet with other member organizations, please consider attending our upcoming Annual Conference to be held in Atlanta, GA, June 20 – 22.

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jen@mobilelabcoalition.org

ELEMENTARY SCIENCE EDUCATOR:

BioScience Explorations in Connecticut is looking for an energetic elementary science teacher and curriculum developer for their new Boehringer Ingelheim Science Quest program. This is a full-time, year-round position. Elementary Teacher Certification and two years of science teaching or laboratory experience required. Bilingual Spanish/English speaker preferred. Please visit www.bioscienceexplorations.org for more information.

MLC ANNUAL CONFERENCE

June 20 – 22, 2010, Atlanta, Georgia

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MOBILE LAB INSTRUCTOR: Looking for an enthusiastic individual to join the MdBioLab team. This is a full-time, year-round position. Minimum of a B.S. in science or education and two years of laboratory science or teaching science required. Must have familiarity with micropipettes, recombinant DNA technology, agarose gel electrophoresis and other basic molecular biology techniques or high school classroom equivalent. Visit www.mdbiolab.org for more information.

CLASSIFIEDS: We've got a lot of empty space here so be sure to send listings for position openings, workshops, lab equipment swaps and everything else to jcolvin@techcouncilmd.com!!!

MLC ANNUAL CONFERENCE

June 20 – 22, 2010, Atlanta, Georgia

Mobile Laboratory Coalition Membership

Why should you join?

The Mobile Laboratory Coalition evolved from a small group of like-minded founders and early adopters who had a vision of a science outreach program that provided engaging and informative learning experiences in laboratory science for all students.

The potential for mobile laboratories became apparent from the start, as demand from both teachers and students reached capacity in the first year. Soon after Boston University implemented a mobile laboratory program in 1998, the University of North Carolina – Chapel Hill established a mobile laboratory program. An informal alliance naturally emerged primarily because we had no one else but each other to guide our efforts in this new endeavor. We were learning on the job, sharing our successes and learning from our mistakes... it was the blind leading the blind. Sure, we attended and continue to subscribe to wonderful science education associations, but they simply did not meet our some of the unique needs associated with mobile laboratories.

When we spoke about our mobile programs among the uninitiated, eyes glazed over and crowds thinned as we touted the size of our generators, discussed fleet insurance, commercial driver licenses, stabilizers and debated putting toilets on the bus (not a good idea by the way!). We

questioned whether teachers should be required to attend workshops, how to manage scheduling, evaluation, and the logistics of teaching onboard the mobile labs. And of course we discussed and compared creative strategies to acquire funding and support!

Within the next few years Cure, MdBio, and the J. Craig Venter Institute added to our numbers creating a critical mass that grew into the Mobile Laboratory Coalition we have today. The point is that the mobile laboratory coalition evolved as a result of unique needs among people with a common vision of science education outreach aboard mobile laboratories. Mobile Laboratory programs are unique enough that they warrant a distinct organization for sharing ideas and insights among people with a common vision of science education outreach.

In an effort to maintain and preserve the original spirit of collegiality and collaboration among our members, we have been hesitant to formalize our little group.

However, with interest and membership in our group increasing, we need to create a structure to best serve the needs of our growing community. Therefore we are offering organizational memberships at a few levels, which are detailed in this newsletter.

I urge you to consider membership for your organization in the Mobile Laboratory Coalition. As a member, you will have access to some tangibles such as the quarterly newsletter, the working MLC Digital Library, and discounts for members attending the annual conference. While these are valuable perks, the real value of membership in the Coalition may well be in the intangibles it offers:

- Remaining on the cutting edge of a relatively new and innovative science education outreach program
- Pioneering a novel model of science education outreach
- Sharing a common mission in a shared vision of science education
- Learning from each other's mistakes and successes
- Realizing the potential to make significant contributions to laboratory-based science education for all students
- Maintaining a dialogue and supportive community for establishing and growing our mobile lab programs

I am sure my colleagues in the Coalition could add many valuable insights to this list, but why not join and speak with them yourselves?!

Don A. DeRosa
 Boston University
 Clinical Assistant Professor
 Director of BU School of Medicine's CityLab and MobileLab
 donder@bu.edu
 617-353-4052

Membership

Mobile Laboratory Coalition

Please consider **Membership** in the Mobile Laboratory Coalition. As a member you will receive immediate access to the MLC digital library, a user-generated online resource, plus other tangible benefits such as the quarterly **newsletter** and **discounts** to attend the annual conference.

Membership in the MLC also supports the development of our growing informal science community, keeping your organization abreast of **new & innovative education programs**, and providing a supportive peer network which encourages learning from each other's mistakes & successes.

Organization member \$250 annually

Organization or program devoted to informal STEM education (active or in development)

Benefits: Quarterly electronic newsletter, access to MLC digital library, reduced registration fee for five people to attend the Annual Conference, listing on the MLC website, and input on future member benefits tailored to community's needs

Inaugural member \$500 2010 only

Eligibility: All "Organization Member" eligible groups. After 2010, would pay \$250 annually.

Benefits: Always listed as an "Inaugural Member" on website and in 2010 press releases in addition to other "Organization Member" benefits.

Supporting member \$500 annually

Typically vendors and service providers of organization members

Benefits: Quarterly electronic newsletter, access to MLC digital library, reduced registration fee for one person to attend the Annual Conference, listing on the MLC website, and input on future member benefits tailored to community's needs

Corporate member \$4,000 annually

Typically vendors and service providers of organization members

Benefits: Recognition as Annual Conference Sponsor (includes exhibit table or space, a 15 minutes presentation during the "Company Presentation Session," and two free registrations), quarterly electronic newsletter with the opportunity to author one article per year, access to MLC digital library, and listings the vendor directory and on the MLC website.

The **MLC Website** is mobilelabcoalition.org and is the current home of the MLC. The **MLC Digital Library** is available for members only at members.mobilelabcoalition.org. Resources include a vendor directory, example curriculum and activities from members, sample budgets, sample evaluations, FAQ on starting a ML, working groups and everything else the community creates. Access is gained instantly through membership. The **Vendor Directory** is a list of Corporate Members and is available on the MLC Digital Library. It includes a direct link to the organization's website, specific contact information and a 200 word description.

How to become a member

Your MLC membership is renewed annually and helps support this all-volunteer organization. The three categories of membership are **Organization Member**, an organization or program devoted to informal STEM education, **Supporting Member**, typically vendors and service providers of organization members, and **Corporate Member**, typically vendors and service providers of organization members who also support the annual MLC Conference and are included in the Vendor Directory.

A fourth membership category for organizations committed to help the MLC succeed is available in 2010 only: **Inaugural Member**. Organizations who become Inaugural Members in 2010 will always be listed as such on the website and in 2010 press releases in addition to the many other Organization Member benefits.

To become a member, please send your check payment and the following form on page 14 to:

CURE, Inc
MLC Membership
300 George Street, Suite 561
New Haven, CT 06511

Make check payable to: CURE (with "MLC" written in the memo line)

JOIN THE MLC! To join the Mobile Laboratory Coalition, please print and complete both pages of this application with your check payment.

Membership Information | Membership Type | Select One

- Organization Member:** Organization or program devoted to informal STEM education (active or in development)
Annual Dues: \$250
- Inaugural Member:** Organization or program devoted to informal STEM education (active or in development)
2010 Dues: \$500
- Supporting Member:** Typically vendors and service providers of organization members
Annual Dues: \$500
- Corporate Member:** Typically vendors and service providers of organization members
Annual Dues: \$4,000

Program/Organization Information

Organization Name: _____

Program Name: _____

Mailing Address: _____

City: _____ State: _____ Zip: _____

Phone: _____ Fax: _____ Web: _____

Number of Program Staff: _____ Operating since (year): _____

Primary Contact Information

Name: _____ Title: _____

Mailing Address: _____

City: _____ State: _____ Zip: _____

Phone: _____ Fax: _____

Email: _____ Web: _____

Organization Members: Attach a program description up to 100 words and three expectations for your MLC membership
Corporate Members: Attach a company summary for the Vendor Directory up to 200 words
Additional Program Staff: Attach a list of additional program staff names, titles, phone numbers & email addresses

The Mobile Laboratory Coalition is an all-volunteer organization. How would YOU like to be involved in the MLC?

For questions about MLC membership please contact Sarah Berke, Ph.D., at sberke@curennet.org or 203.777.8747, x212

Membership Survey

What are your reasons for joining the Mobile Laboratory Coalition?

- Professional development for staff
- Access to other programs/members
- Keeping current
- Reduced conference fees
- Information gathering for your own program
- Access to funding opportunities (current or future)

And also... _____

What future programs and/or benefits would you like to be available to members?

- Purchasing program
- Joint funding proposals
- Ongoing professional development
- Local chapters

And also... _____

What type of program(s) is your organization currently offering?

Mobile Laboratory: Bus Trailer Other: _____

Equipment loan(s) to classrooms: With an instructor Without an instructor

Onsite facilities: Tours Laboratory activities Classroom activities Internships/graduate programs

We are service providers: Build mobile units Sell products/services Other: _____

In development - what are you developing? _____

How is/are your program(s) funded?

- Self-funded (via organization)
- Foundation(s)
- Keeping current
- Grant(s)
- We charge users for our programs
- Access to funding opportunities (current or future)

What kind of grant(s) (optional)? _____

Mobile Laboratory Coalition Digital Library Retainer

The Mobile Laboratory Coalition maintains the Digital Library website for the sole purpose of sharing information between its members. By using the Digital Library website you agree to comply with the bylaws and procedures of the Mobile Laboratory Coalition. The Digital Library website contains confidential and/or copyrighted material. Any information gathered from The Digital Library website may be used for Mobile Laboratory Coalition members and their informal science education programs only. Members/Users shall not disclose, in whole or in part, confidential information obtained from the Digital Library website. Members of the Mobile Laboratory Coalition agree to share any curriculum developed in furtherance of the Coalition's goals. By using the Digital Library website you agree to hold the Mobile Laboratory Coalition harmless for the infringement of any proprietary information shared by another Member.

Signature: _____

Printed Name: _____

Date: _____

Payment

Please send your check payment (made payable to "CURE" with "MLC" written in the memo line) and this form to:

CURE, Inc
 MLC Membership
 300 George Street, Suite 561
 New Haven, CT 06511

For questions about MLC membership please contact Sarah Berke, Ph.D., at sberke@curenet.org or 203.777.8747, x212