

Michigan Department
of Community Health



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LabLink

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Bureau of Laboratories

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Change in MDCH Parasitology Collection Kit

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The following is reprinted information sent to all agencies submitting parasitology specimens to MDCH in the last two years. It is important to share this significant change with all public health partners.

In a continual effort to be more ‘green’ by reducing our hazardous waste stream, MDCH Bureau of Laboratories (BOL) recently completed an evaluation of an alternative to the mercury-based preservative in the specimen collection and transport kits for the ova and parasite examination (O&P).

Traditional preservation kits for stool samples submitted for O&P examination utilize a two-vial set with one vial containing 10% formalin and the second containing PVA. PVA is an excellent fixative, but it contains mercuric chloride, which poses an environmental hazard. Modified PVA formulations without mercury have been available for several years, but most failed to match the quality of mercury-containing preparations for preservation of protozoan morphology. Recently MDCH evaluated several modified PVA formulations and found that zinc sulfate an acceptable alternative.

MDCH started providing collection kits using the zinc PVA formulation in June 2008. As of February 1, 2009, MDCH no longer accepts specimens for O&P examination that are collected in a mercury-containing PVA. The mercury-containing PVA (identified by MCC reference number 2802-05 on the label) has a dark blue cap, while the new formulation, Z-PVA, (identified by MCC reference number 2803-05 on the label) has a light blue cap. You may order new collection kits (Unit 6) by contacting the MDCH Specimen container Unit at 517-335-9867 or faxing your order to 517-335-9039.

If you still have collection kits with the mercury-containing PVA after 1 February, returned them to MDCH for disposal during the month of February. Please contact Dr. James Rudrik at 517-335-9641 for further instructions. All patient samples collected in mercury-containing PVA and submitted after February 1, 2009 will be **rejected as unacceptable for testing.**

This change results in “greener” chemistry within the MDCH laboratory. The use of Z-PVA is safer for employees and saves a substantial amount in mercury disposal costs without compromising the quality of this service.

Rabies: How the 2008 Season Compared to the Record Season of 2007

Patty Clark, M.P.H.
Viral Serology/Viral Isolation/Viral Molecular Unit

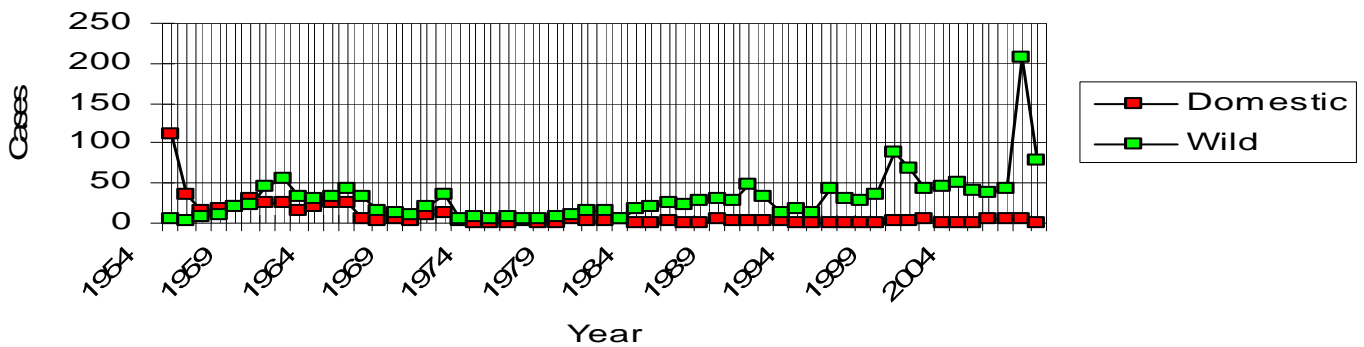
In 2007, the MDCH rabies laboratory received a record number of rabies submissions (3863) with a record number of positives (210). Early in 2008, the lab was on target to beat the 2007 numbers, but ended with 3839, a slight decline in overall submissions but still second in annual submissions. The positivity rate in 2008 was down as well with the lab confirming 79 (2.06%) rabies positive animals compared to 5.4% in 2007. Even with a large volume of submissions, the positivity rate dropped back to normal levels. Typically, the annual positivity rate for rabies submissions is between 1% and 3%. See the map on page 3 for a breakdown of positive specimens by county and species.

Bats, as usual, topped the list of rabies positive animals submitted to the state lab with 70 confirmed positives. The other nine positive specimens were skunks (6), fox (2), and cat (1). In 2003, the MDCH lab began strain typing non-bat rabies positives using sequence analysis. Consistent with past years, all nine non-bat specimens in 2008 were infected with North Central (NC) Skunk rabies variant.

Since 2003, there have been 45 non-bat rabies positive specimens (9 cats, 7 fox, 2 dogs, 20 skunks, 1 sheep, 5 horses, and 1 cow); all have been sequenced as NC Skunk strain.

So how did 2008 compare to 2007? Specimen submission numbers were very close (3839 vs. 3863) but rabies positivity rates were back down to normal levels (2.06% vs. 5.4%). In both years, the non-bat positive species were comparable with 5 skunks, 2 fox, 1 dog, 2 cats, and 1 horse testing positive in 2007. The major difference in the two years was the number of rabies positive bats detected 199 in 2007 vs. 70 in 2008. In a past article (*LabLink* Vol. 12, No. 4, Fall 2007), it was proposed that the increase in positivity rate might have been due to the increase in specimen submissions. This was not the case in 2008 since there were similar submission rates, but very different positivity rates. While it was not determined why there was such a large increase in rabies positive bats in 2007, that trend did not continue in 2008.

Cases of Animal Rabies, Michigan 1954 - 2008



Hospital Exercises to Test Laboratory Emergency Preparedness in 2009

The Bureau of Laboratories (BOL) is planning a series of exercises in 2009 to assess the readiness of Michigan hospitals to submit specimens during a public health emergency. Laboratories will receive notice of a mock scenario involving bioterrorism, chemical terrorism, or pandemic influenza and instructions to submit specimens appropriate to the scenario. The exercises will test laboratory staff awareness of protocols, access to materials, and ability to properly package specimens. All hospital laboratories will be included in the exercises that are expected to begin in April 2009. Watch for more details from MDCH.



BOL Web Page Use Questionnaire

Please help the MDCH Bureau of Laboratories improve its web page by completing this short questionnaire about your use of the Lab Web Page (www.michigan.gov/mdchlab). It should only take 5 to 10 minutes of your time to complete.

Thank you for choosing to participate. Please follow this link to access the questionnaire: <http://www.questionpro.com/akira/TakeSurvey?id=1139157>

Packaging and Shipping Course Schedule Announced

MDCH is offering the Packaging and Shipping for the Clinical Laboratory course in several locations in the upcoming months. Each session will combine initial training for those not previously certified and a refresher course for those renewing their certification. Dates and locations for the course include:

March 12, 2009	Grand Blanc
March 25, 2009	Lansing
March 27, 2009	Marshall
March 31, 2009	Ann Arbor
April 15, 2009	Pontiac
April 28, 2009	Gaylord
April 30, 2009	Grand Rapids
May 19, 2009	Royal Oak

Specific course information and registration may be found at <http://mi.train.org>. For possible training opportunities in the Upper Peninsula, please contact Valerie Reed at 517-335-9653 or at reedv@michigan.gov.

Bureau of Laboratories Vision

The Bureau of Laboratories is a stronger, more diverse team within an integrated public health system. We utilize advanced technology and innovative leadership to provide comprehensive public health services in our dynamic global community.

Bureau of Laboratories Mission

We are dedicated to continuing leadership in providing quality laboratory science for healthier people and communities through partnerships, communication and technical innovation.

QUIRKY BUGS...

Beth Holben, MT(ASCP)
Reference Bacteriology Unit

Unusual gram negative bacteria are frequent submissions to the reference bacteriology unit at MDCH. These isolates are usually submitted because commercial identification systems have failed to identify them with any degree of confidence, or one or more of the pieces of the puzzle do not fit the identification profile.

One such blood culture isolate was received in March 2008 from a 49-year-old male with a diagnosis of cellulitis. The initial Gram stain was very distinctive, showing large gram negative coccobacilli and cocci in groups and aggregates, also known as "O" forms. Growth on sheep blood agar was light growth after 72 hours incubation at 35° C in 5% CO₂. The colonies were 1 to 2 mm in diameter, dry, wrinkled, with spreading edges. No hemolysis was observed. There was no growth on MacConkey agar.

After 24 hours of incubation, this organism demonstrated a weakly acidic reaction on both the slant and the butt of the TSI (a/a) and was a glucose fermenter. The oxidative sugars showed no change. The open (no oil) and closed (oil overlay) fermentative sugars were both acidic (positive), verifying a fermentative metabolism. Additional preliminary testing indicated that this organism was oxidase, catalase (weakly), nitrate, nitrite, and urea positive.

Upon further testing, the isolate showed acid production in glucose, sucrose, maltose, and mannitol in 2-3 days. Acid was not produced in lactose, trehalose, raffinose, inulin, salicin, adonitol, dulcitol, sorbitol, xylose, rhamnose, or arabinose. After 7 days incubation at 35°C, the lysine decarboxylase, ornithine decarboxylase, arginine decarboxylase/dehydrolase,

phenylalanine deaminase, Voges-Proskauer (VP), gelatinase, starch hydrolysis, and H₂S production were also negative.

The cellular fatty acid (CFA) analysis by gas liquid chromatography demonstrated two predominant acids: 16:0 and 16:1w7cis, which failed to provide an acceptable identification. The profile most closely resembled that of a *Pseudomonas*-like organism when compared to an extensive GLC fatty acid profile database (by MIDI systems).

After close examination of all morphological, biochemical, and chromatography data, and consultation of all available charts and manuals, it was determined that the reactions were not consistent with any described gram negative coccoid organism.

Occasionally MDCH is unable to identify an organism with 100% certainty. When this occurs, a report is sent to the submitter stating that the isolate could not be identified at the MDCH with a suggestion that it be forwarded to the Centers for Disease Control (CDC) for further characterization and sequencing. If the submitter decides that further identification is necessary, the CDC requires that a patient history form (CDC 50.34) accompany each isolate. The form is available on the MDCH website: http://www.michigan.gov/mdch/0,1607,7-132-2945_5103-14806--,00.html

Using 16s rRNA gene sequencing, a common rapid molecular tool, the CDC identified this organism as *Lautropia mirabilis*. The sequence indicates that this organism belongs to a separate branch of the beta subgroup of *Proteobacteria*, most closely related to the genus *Burkholderia*.

Lautropia mirabilis was first described by Gerner-Smidt, et. al. in 1994. The organism is a facultatively anaerobic, aggregate forming, gram negative coccoid bacterium. The cell morphology is highly variable, ranging from

coccobacilli, 1µm in diameter, to spheroblast-like forms, more than 10µm in diameter. There are several distinct colony types observed from smooth, mucoid colonies, to dry, rough, wrinkled forms.

Fig.1 Gram-stained smear

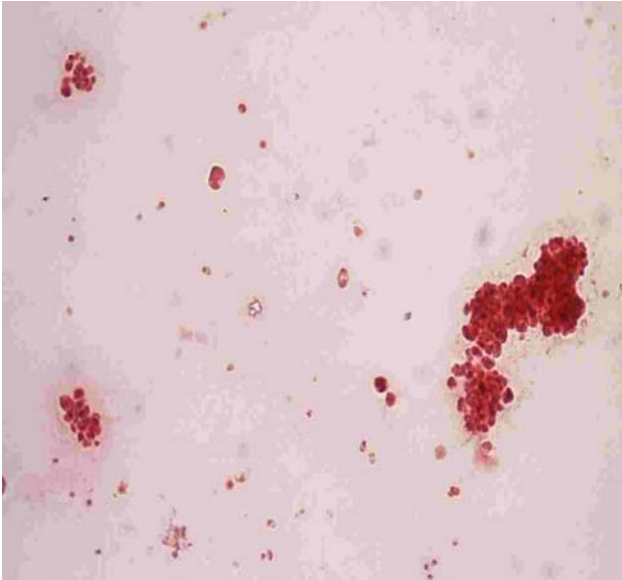


Fig.2 Growth on Sheep Blood Agar



Table 1- Biochemical profile of *Lautropia mirabilis*

Test	Result	Test	Result
Hemolysis on SBA	-	Indole production	-
Catalase	+	Nitrate reduction	+
Oxidase	+	Nitrite reduction	+
TSI - reaction	a/a	Urea hydrolysis	+
Motility	+	Citrate utilization	-
Growth on MAC	-	Litmus Milk	K
Glucose fermented	+	SS Agar growth	-
Xylose fermented	-	Esculin hydrolysis	+
Mannitol fermented	+	Gelatin liquefaction	-
Lactose fermented	-	Nut. broth (growth)	+
Sucrose fermented	+	MR test	+
Maltose fermented	+	VP test	-

Lautropia mirabilis has been isolated from blood, oral and upper respiratory sites, but it has also been isolated as the predominant microorganism from the sputum of cystic fibrosis patients and the oral cavities of children infected with human immunodeficiency virus. Its pathogenicity is unknown since it has been recovered from both healthy and ill patients.

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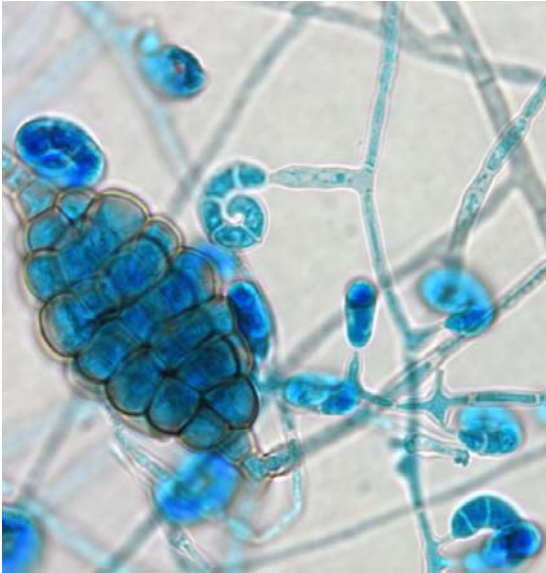
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3. Daneshvar, M., M. P. Douglas, R. S. Weyant 2001. Cellular Fatty Acid Composition of

FUN FUNGI.....

Helicoma chlamydosporum

Sandy Arduin MT (ASCP) & Bruce Palma MT (ASCP) - Mycobacteriology/Mycology Unit

Last Issues Picture Quiz Answer:



Helicoma chlamydosporum:

There are currently 32 *Helicoma* species. They are often found on decaying wood, bark, and leaves. *Helicoma* spp. conidia are pale yellow, circinate, and coiled $1\frac{1}{4}$ - $1\frac{3}{4}$ times on a single plane. They have 2-12 septa and thick conidial filaments. They are also non-hygroscopic (do not expand and uncoil in water). Conidia are produced on blunt-tipped denticles formed either on lateral swellings found on repent hyphae or on 0-3 septate conidiophores. Several denticles may form on each conidiophore. Hyphae are hyaline, becoming pale yellow and then brown with age. *Helicoma chlamydosporum* and *H. depressispora* form chlamydospores. The chlamydospores are intercalary, dictyosporous (muriform) and constricted at the septa. They are light brown at first, becoming almost black with age. The isolate submitted to MDCH was identified as *H. chlamydosporum* based on the size of the conidia and the number of septa (4

septa). The colony morphology of this isolate was dark brown to black and membranous.

References:

1. Chang, Ho-Shii. *Three Dematiaceous Hyphomycetes from Taiwan*. 1999. Bot.Bull. Acad. Sin. Vol. 40. pp. 247-250.
2. Goos, R.D. *A Review of the Anamorph Genus Helicoma*. 1986. Mycologia. Vol. 78, no. 5. pp. 744-761.
3. Shearer, C.A. *Helicoma Chlamydosporum, A New Hyphomycete from Submerged Wood in Panama*. 1987. Mycologia. Vol. 79. no. 3. pp. 468-472.
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Picture Quiz: What is this?



BOL Staff Changes

Bureau of Laboratories Safety Officer Appointed

Judith K. Smith was recently appointed as the Bureau of Laboratories Safety Officer. She previously was a Quality Control Officer and a microbiologist in the Bureau. Her testing experience positioned her well to manage infectious disease and chemical agent risks in the laboratory. Ms. Smith has a Bachelor of Science degree from Central Michigan University. She recently completed the OSE/MIOSHA Alliance ceremony and State of Michigan MIOSHA Training Institute (MTI). Ms. Smith may be contacted at 517-335-8850 or at smithjk@michigan.gov.

Chemical Terrorism Laboratory Response Coordinator Changing

Martha (Marty) Boehme is stepping down as Chemical Terrorism Laboratory Response Coordinator after 2½ years of service. Marty worked to improve internal BOL procedures for chemical terrorism specimen packaging and shipping and provided training for hospital laboratory staff. She worked with Ninah Sasy, who developed an online training for hospital laboratory staff.

Marty will be returning to the Division of Infectious Diseases to assume the duties of Antimicrobial Resistance Microbiologist for the Bureau of Laboratories. The funding of this new position by the Michigan Legislature underscores their concern about the problem of growing resistance as well as demonstrating recognition of the importance of the data generated by clinical microbiologists.

In her new position, Marty will return to activities she previously began, interacting with clinical microbiology colleagues to provide guidance on testing procedures, to assure appropriate susceptibility testing standards are

used and to obtain local antibiograms to construct a statewide picture of resistance. She will work to facilitate reporting and submission of isolates of public health importance.

Contact Marty through the Bureau office at 517-335-8063 or at boehmem@michigan.gov for guidance on susceptibility testing issues, highly resistant organisms, biosafety and clinical microbiology testing concerns. Working with Val Reed, Bioterrorism Training Coordinator, Marty will draw upon the considerable expertise of the BOL staff and interface with the Bureau of Epidemiology to address your concerns.

Ninah Sasy will assume temporary CT responsibilities until a new CT coordinator is named. Ninah can be reached through the division office at 517-335-9490 or by email at SasyN@michigan.gov.

LabLink is published quarterly by the Michigan Department of Community Health, Bureau of Laboratories, to provide laboratory information to Michigan health professionals and the public health community.

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MDCH Labs Go Green



Usually in Michigan, proclaiming “Go Green” is a provocative declaration to the other half of the state that prefers “M Go Blue”. But at the Michigan Department of Community Health laboratories, *everyone* is enthusiastically going green.

Inspired by concerns of the effects of global warming and the energy crisis, the MDCH lab is collaborating with the Department of Management and Budget (DMB) and lab building co-occupants, the Department of Environmental Quality (DEQ), to take simple but meaningful steps to decrease energy usage and the waste streams leaving the building.

“It started with a few scientists asking if there was more we could do more recycling. From there, I asked DMB about how much energy we use to power this building,” said MDCH laboratory director, Dr. Frances Pouch Downes.

When the DMB provided monthly electricity and natural gas use and costs to the lab, the staff was shocked to see the lab, built in 1994, consumed over \$70,000 monthly. In general, the lab utility costs are about 300% that of a typical office building of the same size.

The scientists and Downes invited DEQ and DMB to join them in forming a Green Team to increase recycling, reduce waste and energy use, and increase use of reusable and renewable materials. The Green Team provided the baseline data on energy use and recycled materials. As a motivator, the team proposed that savings on energy costs be redirected into property improvements that would encourage employees to use break and lunch times to go outside and walk. The Green Team has identified actions that can be taken at the personal, lab unit, lab administrative and facility management levels. (See table on page 10)

Materials and supplies used in the lab and specimen shipping containers used to fill the hallways daily awaiting removal to the trash by the janitorial service contractors. DMB already had a cardboard, newspaper and office paper recycling program in place. But now Styrofoam has been added to the DMB recycling program. Volunteers from MDCH and DEQ share responsibility for taking brown glass, batteries and boxboard to a local recycling center. The janitorial contractor is investigating incorporating a stop at the lab on their way to the recycling center. Ideas and volunteer efforts grow as individuals recognize that their peers have changed habits. The Green Team has added No. 5 plastics, aluminum foil, brown paper, and more to its recycling agenda.

Starting with these tips, we hope your laboratory will also join the Green Lab effort. If you have additional successes in reducing your lab’s environmental impact, please share them with our editor (shifletts@michigan.gov) and we will pass them on in future issues of the *LabLink*.

Examples of Green Activities to Consider Whenever Feasible and Safe

Personal	Lab Unit	Administrative	Facility Management
Use task lights or minimal overhead lighting	Provide space and containers for expanded recycling	Include promotion of and activities in Green Team in performance evaluations	Expand contract with recycling vendor to include additional materials
Lower sashes on fume hoods while not in use	Replace tradition reagents with non-hazardous alternatives	Include language in contracts requiring vendors to use recyclable or reusable packaging	Install motion sensors on conference room and restroom light switches
Run refrigerators and freezers full	Investigate alternate procedures using lower volumes of hazardous chemicals	Provide intranet space for posting surplus supplies and equipment for internal re-deployment	Provide bike racks and bus stop shelters
Separate white and mixed papers for recycling	Include Green Team activities as an item on staff meeting agendas	Replace old refrigerators and freezers with energy efficient models	Regulate workspace temperatures to eliminate space heaters and fans
Re-use paper that is clean on one side or print 2-sided documents	Reuse sterilized or cleaned specimen shipping containers	Recognize exemplary Green of performance to individuals and teams with "Energy Star" awards	Include use of non-toxic cleaning materials requirements in janitorial contracts
Replace distilled water with RO or deionized water			