MAPS

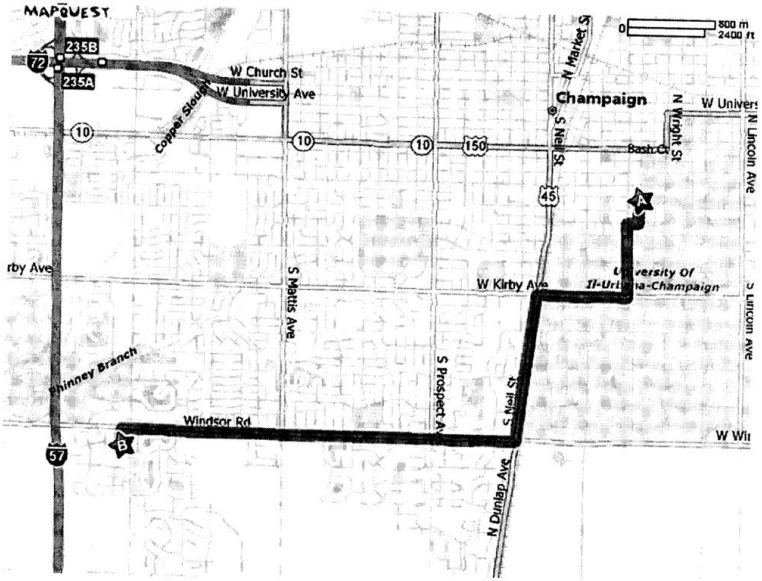
A: 909 S 5th St, Champaign, IL 61820-6226

START	1: Start out going SOUTH on S 5TH ST toward E CHALMERS ST.	0.2 mi
	2: Turn RIGHT onto E ARMORY AVE.	0.1 mi
	3: Turn LEFT onto S 4TH ST.	0.5 mi
	4: Turn RIGHT onto E KIRBY AVE.	0.6 mi
	5: Turn LEFT onto S NEIL ST/US-45.	1.0 mi
	6: Turn RIGHT onto WINDSOR RD.	2.6 mi
	7: Turn LEFT onto VILLAGE GREEN PL.	0.1 mi
END	8: End at 2511 Village Green Pl Champaign, IL 61822	

Estimated Time: 12 minutes Estimated Distance: 5.08 miles

B: Jupiter's: 2511 Village Green Pl, Champaign, IL 61822, (217)366-8300

Total Time: 12 minutes Total Distance: 5.08 miles



Directions to Jupiter's at the Crossing, 2511 Village Green Pl., Champaign.

AMCOP 60, June 5-7, 2008
The University of Illinois at Urbana - Champaign.

Contents

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Minnesota State University – Mankato

Program Officer …… Dr. Milton McAllister
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Acknowledgements

THE DR. NORMAN D. LEVINE AND DR. JORGE AND MARY ANNE GUERRERO LECTURE SERIES IN VETERINARY PARASITOLOGY.
For providing an invited public lecture and an afternoon reception.

ELANCO ANIMAL HEALTH
A Division of Eli Lilly and Company
For support of the Herrick Award.

THE AMERICAN SOCIETY OF PARASITOLOGISTS
For support of speakers' travel expenses.

THE MEMBERSHIP OF AMCOP
For support of the LaRue, Cable, and Honorable Mention Awards and other expenses.

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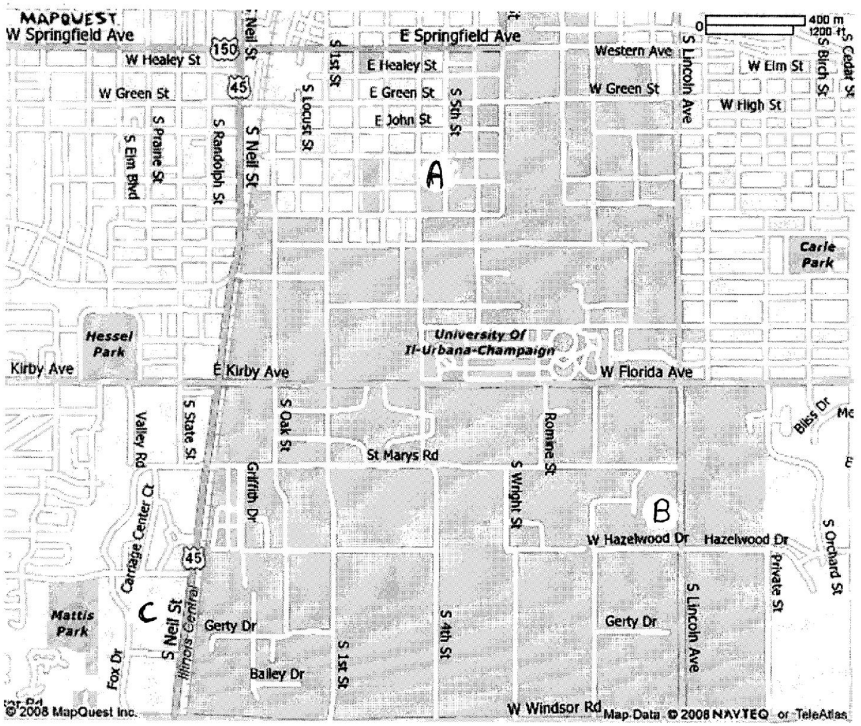
For providing electronic registration and management services to the conference.

MAPS

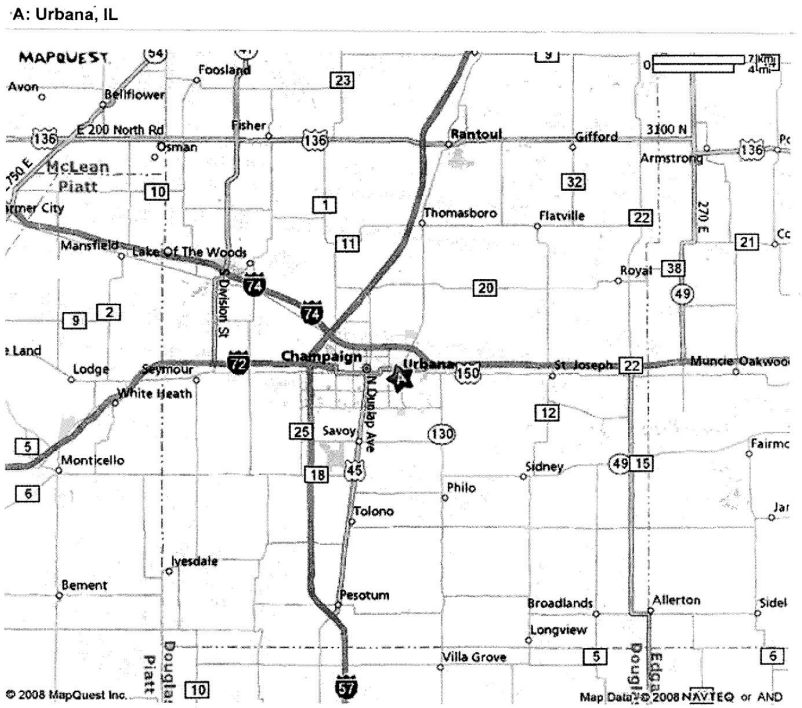


A: Sherman Hall, 909 S. 5th St., Champaign.

B: Basic Sciences Building, 2001 S. Lincoln Ave., Urbana.

C: Biaggi's Ristorante Italiano, 2235 S. Neil St, Champaign.

MAPS



Schedule In Brief

THURSDAY, JUNE 5, 2008

After 2:00 pm Arrival and Check-in.
6:00 -9:00 pm Opening Mixer.

FRIDAY, JUNE 6, 2008

8:00am Continental Breakfast & Silent Auction Setup.
8:30 Opening Remarks and Welcome
- Dr. Milton McAllister, Program Officer
- Dr. Herbert Whiteley, Dean, University of Illinois College of Veterinary Medicine

8:45 Platform Presentations
10:15 Break & Silent Auction Bidding
10:30 Platform Presentations
12:00 Lunch
1:15 Platform Presentations
2:00 Break & Silent Auction Bidding
2:30 The AMCOP Symposium: Parasitic Protists
- Invited Speaker: Dr. Laura J Knoll
- Invited Speaker: Dr. Alexa C. Rosypal*

4:45 Poster Session & Reception*
7:30 Banquet.
- Invited Speaker: Dr. Dennis Minchella.

SATURDAY, JUNE 7, 2008

8:00am Continental Breakfast
8:30 Committee Time
9:00 Silent Auction Bidding Closes
9:00 Business Meeting
- Dr. Robert Sorensen, Presiding

* Sponsored by the Dr. Norman D. Levine and Dr. Jorge and Mary Anne Guerrero Lecture Series in Veterinary Parasitology.

Detailed Schedule

THURSDAY, JUNE 5, 2008

After 2:00 pm — Arrival and Check-in at Sherman Hall, 909 S. 5th St., Champaign.

6:00 -9:00 pm — Opening Mixer at Jupiter's at the Crossing, 2511 Village Green Pl., Champaign.

FRIDAY, JUNE 6, 2008

Veterinary Medicine Basic Science Building, University of Illinois College of Veterinary Medicine, 2001 S. Lincoln Ave., Urbana.

8:00am Continental Breakfast & Silent Auction Setup.

8:30 Opening Remarks and Welcome
- Dr. Milton McAllister, Program Officer
- Dr. Herbert Whiteley, Dean, University of Illinois College of Veterinary Medicine

8:45 **1.** Risk Factors for *Cryptosporidium* and *Giardia* in Wisconsin dairy calves. **Matt Brewer (UG)**, Nathan Butler (UG), Julie Anderson, and Darwin Wittrock. Department of Biology, University of Wisconsin–Eau Claire, Eau Claire, WI 54701.

9:00 **2.** Population dynamics of *Crepidostomum cornutum* in its crayfish second intermediate host. **Kyle Luth (UG)**, and Eric Wetzel, Dept. of Biology, Wabash College, Crawfordsville, IN 47933.

9:15 **3.** Characterization of the *Sarcocystis neurona* merozoite surface antigen SnSAG5. **Carolyn A. Crowdus (UG)[1],** Antoinette Marsh[2] and Daniel K. Howe[1]. [1]Department of Veterinary Science, University of Kentucky, Lexington, KY 40546-0099 and [2]Department of Veterinary Preventive Medicine, College of Veterinary Medicine, The Ohio State University, Columbus, OH 43210-1092.

9:30 **4.** Analysis of genetic variation between strains of *Isospora sp* from two isolated populations of *Dendrocincla mercula*

2008 AMCOP DUES

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Announcement of AMCOP 60

ANNUAL MIDWESTERN CONFERENCE OF PARASITOLOGISTS

JUNE 5-7, 2008 at

UNIVERSITY OF ILLINOIS, URBANA-CHAMPAIGN, IL

Registration for AMCOP 60 is electronic. Please see http://www.cvm.uiuc.edu/ope/amcop/index.html for details.

(Passeriformes) native to South America. **Frederik Rebling (UG)**,[1] Thomas McQuistion,[1] and Samuel Galewsky.[1] [1]Department of Biology, Millikin University, Decatur, IL 62522.

9:45 **5.** Endoparasites in bobcats (*Felis rufus*) from southern Ohio. **Rachel E. Shanks, (UG)**[1], Suzie Prange[2], and Ramon A. Carreno[1], [1]Department of Zoology, Ohio Wesleyan University, Delaware, OH 43015, USA.[2]Ohio Division of Wildlife, Waterloo Wildlife Research Station, Athens, Ohio 45701.

10:00 **6.** *Babesia spp.*, a causative agent for an emerging tick-borne disease, was amplified from tick DNA to determine prevalence in sample area along with co-infection with *Borrelia burgdorferi*. **Hannah Wilder (UG)**, Kimberly Bates and David Essar. Department of Biological Sciences, Winona State University, Winona, MN 55987.

10:15 Break & Silent Auction Bidding.

10:30 **7.** Parasites of the northern river otter, *Lontra canadensis*, in Ohio with comments on the systematics of *Baschkirovitrema incrassatum* (Diesing, 1850) Skrjabin, 1944. **Sam Valerius (UG)** and Ramon A. Carreno, Department of Zoology, Ohio Wesleyan University, Delaware, Ohio 43015.

10:45 **8.** Identification of genes involved in mosquito infectivity for *Brugia pahangi.* **Kathryn Griffiths (GS)**[1], Sara Erickson[2], Jeremy Fuchs[2], Bruce Christensen[2] and Shelly Michalski[1]. [1]Biology and Microbiology Department, University of Wisconsin–Oshkosh, Oshkosh, WI 54901 and [2]Department of Pathobiology, University of Wisconsin–Madison, Madison, WI 53706.

11:00 **9.** *Amblyomma* & *Borrelia:* Combining field surveys and molecular diagnostics in the study of *Borrelia lonestari* in Illinois. **Brandon Jutras (GS)**, [1] Jeffrey Laursen,[1] Zhiwei Liu.[1] [1]Department of Biological Sciences, Eastern Illinois University, Charleston, IL 61920.

11:15 **10.** Describing the spatial distribution of parasites on *Peromyscus* species in southern Michigan. **Erica L. Mize (GS)**[1], Brian A. Maurer[1], Jean I. Tsao[1,2], and Barbara L.

Lundrigan.[3,4] [1]Department of Fisheries and Wildlife, Michigan State University, East Lansing, MI 48824, [2]Department of Large Animal Clinical Sciences, Michigan State University, East Lansing, MI 48824, [3]Department of Zoology, Michigan State University, East Lansing, MI 48824 and [4]Michigan State University Museum, East Lansing, MI 48824.

11:30 **11.** Comparing patterns of schistosome genetic diversity and population structuring in two Brazilian villages. **Elizabeth A. Thiele (GS)**[1], Robert E. Sorensen[2], Andrea Gazzinelli[3], Dennis J. Minchella[1]. [1] Department of Biological Sciences, Purdue University, West Lafayette, IN 47907, USA, [2] Department of Biological Sciences, Minnesota State University Mankato, Mankato, MN 56001, USA, [3] Escola de Enfermagem, Universidade Federal de Minas Gerais, Belo Horizonte, MG, Brazil.

11:45 **12.** Distribution of the snails associated with waterbird mortality in Lake Onalaska, Wisconsin. **Emily M. Koppel (GS)**, and Robert E. Sorensen, Department of Biological Sciences, Minnesota State University, Mankato, Mankato, MN 56001.

12:00 Lunch

1:15 **13.** Phylogenetic analyses of globally distributed echinostome parasites and comparative population genetics of North American species. **Jillian Detwiler (GS)**,[1] David H. Bos,[1] Dennis J. Minchella.[1] [1]Department of Biological Sciences, Purdue University, West Lafayette, IN 47907.

1:30 **14.** An unusually severe infection of *Collyriclum fara* in an American crow *Corvus brachyrhynchos*. **Mauritz C. Sterner**, David E. Green, and Rebecca A. Cole, United States Geological Survey, National Wildlife Health Center, 6006 Schroeder Road, Madison Wisconsin, 53711.

1:45 **15.** Developing a Digital Video Web Resource for Parasitology Education. **Shelly Michalski**, Biology and Microbiology Department, University of Wisconsin–Oshkosh, Oshkosh, WI 54901.

2:00 Break & Silent Auction Bidding

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THE AMCOP SYMPOSIUM
Parasitic Protists

2:30 **16.** Identification of genes necessary for chronic infection by a parasite. **Laura J. Knoll**, University of Wisconsin, Madison WI.

3:30 Break

3:45 **17.** Emergence of canine leishmaniasis in the United States. **Alexa C. Rosypal**, University of North Carolina, Chapel Hill NC. A public lecture sponsored by the Dr. Norman D. Levine and Dr. Jorge and Mary Anne Guerrero Lecture Series in Veterinary Parasitology.

POSTER SESSION AND RECEPTION

Atrium of the Veterinary Medicine Basic Science Building. Reception sponsored by the Dr. Norman D. Levine and Dr. Jorge and Mary Anne Guerrero Lecture Series in Veterinary Parasitology.

4:45 **18.** Molecular identification of *Cryptosporidium* species infecting Wisconsin dairy calves. **Matt Brewer (UG)**, Nathan Butler (UG), Julie Anderson, and Darwin Wittrock. Department of Biology, University of Wisconsin–Eau Claire, Eau Claire, WI 54701.

19. Can oxytetracycline eliminate the chronic stage of *Anaplasma marginale* in cattle? **Suzanne Bulson (UG), Dana N. Fey (UG)** and Douglas B. Woodmansee, Department of Biology, Wilmington College, Wilmington, Ohio 45177.

20. Behavioral response patterns of freshwater snails to biotic, abiotic factors and parasitism. **Trent Gray (UG)**, Jillian L. Detweiler, and Dennis J. Minchella. Department of Biological Sciences, Purdue University, West Lafayette, IN 47907.

21. Strain resistance to *Eimeria falciformis* (Apicomplexa: Eimeriidae) in mice. **Renee E. Seager (UG)**,[1] and Thomas E. McQuistion.[1] [1]Department of Biology, Millikin University, Decatur, IL 62522.

22. Localization of *Leishmania chagasi* MSP in the amastigote-infected macrophage. **Chia-Hung Christine Hsiao (GS)**[1], Jian Q. Shao[2], John E. Donelson[3], and Mary E. Wilson[1,4,5,6,7]. [1]Molecular Biology Program, [2]Central Microscopy Research Facility, [3]Departments of Biochemistry, [4]Internal Medicine, [5]Microbiology, and [6]Epidemiology, University of Iowa, and the [7]VA Medical Center, Iowa City, IA.

23. Localization of glycotope expression in miracidia and sporocysts of *Schistosoma mansoni* using confocal immunofluorescence microscopy. **Nathan A. Peterson (GS)**, Cornelis H. Hokke, Andre M. Deelder, and Timothy P. Yoshino. Department of Pathobiological Sciences, University of Wisconsin-Madison, Madison, WI.

24. Functional genomic screen of early larval *Schistosoma mansoni* development using RNA interference. **Marina M. Mourao (GS)**; [1] Nathalie Dinguirad;[2] Gloria R. Franco,[1] Timothy P. Yoshino.[2] [1]Department of Biochemistry and Immunology, Universidade Federal de Minas Gerais, Belo Horizonte, MG, Brazil and [2] Department of Pathobiological Sciences, University of Wisconsin, Madison, WI, USA 53705.

25. Validation of the specificity and sensitivity of a PCR test for detection of *Plasmodium gallinaceum***. H. Shalini Wijayathilake (GS)** and Milton M. McAllister, Department of Pathobiology, University of Illinois at Urbana-Champaign, Urbana IL 61802.

26. Construction and immunoscreening of *Angiostrongylus cantonensis* cDNA expression library. **Apichat Vitta (GS)**[1], Paron Dekumyoy[1], Thareerat Kalambaheti[2], Chalit Komalmisra[1], Jitra Waikagu1[1], Jiraporn Ruangsittichai[3] and Timothy P Yoshino[4].

27. Differentiation of larva migrans caused by *Baylisascaris procyonis* and *Toxocara* spp by western blot. **Sriveny Dangoudoubiyam (GS)** and Kevin R. Kazacos. Department of Comparative Pathobiology, Purdue University, West Lafayette, IN 47906.

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Michelle Yeargan
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28. The Use of Clinical Chemistry and Serology in the Improved Diagnosis of Human African Trypanosomiasis (HAT). **Henrietta O. Awobode** [1,3] and Obokparo G. Ohore[2]. [1] Department of Zoology, University of Ibadan, Nigeria. [2] Department of Pathology, College of Veterinary Medicine, University of Ibadan, Nigeria and Department of Pathobiology, University of Illinois, Urbana-Champaign, IL 61801.

BANQUET

Biaggi's Ristorante Italiano, 2235 S. Neil St., Champaign, 7:30 pm.

Invited speaker: **Dr. Dennis Minchella**, Purdue University. PC (Post Cable) Parasitology at Purdue.

SATURDAY, JUNE 7, 2008.

Veterinary Medicine Basic Science Building, University of Illinois College of Veterinary Medicine, 2001 S. Lincoln Ave., Urbana.

8:00am Continental Breakfast.

8:30 Time for committees to complete reports.

9:00 Silent Auction Bidding Closes

9:00 AMCOP 60 Business Meeting and Award Presentations. Dr. Robert Sorenen Presiding.

Abstracts

1 Risk Factors for *Cryptosporidium* and *Giardia* in Wisconsin dairy calves.

Matt Brewer (UG), Nathan Butler (UG), Julie Anderson (MP), and Darwin Wittrock (MP). Department of Biology, University of Wisconsin–Eau Claire, Eau Claire, WI 54701.

Cryptosporidium and *Giardia* are protozoan parasites that infect the gastrointestinal tract of many vertebrate hosts. Cryptosporidiosis and Giardiasis are endemic in Wisconsin, causing diarrheal illness in both humans and livestock. Although human infections are attributed to agricultural runoff, this is the first study to assess the prevalence of *Cryptosporidium* and *Giardia* in Wisconsin cattle. Fecal samples were obtained rectally from a total of 161 dairy calves on 20 farms in Wisconsin. Ten grams of manure was purified with CsCl, stained with fluorescent antibodies, and examined for the presence of parasites. A total of 61 (37.9%) and 43 (26.7%) calves were infected with *Cryptosporidium* and *Giardia*, respectively. Nineteen (11.8%) calves were infected with both parasites concurrently. Analysis of farm practices revealed sanitation, farm management, and biological risk factors associated with the occurrence of *Cryptosporidium*. Calf pen sanitation practices were the only variables associated with *Giardia* infections. Asymptomatic cyst shedding by cattle may pose a threat to human health; however, outbreaks can be controlled through farm management efforts.

.

2 Population dynamics of *Crepidostomum cornutum* in its crayfish second intermediate host. **Kyle Luth (UG)**, and Eric Wetzel, Dept. of Biology, Wabash College, Crawfordsville, IN 47933.

We examined the seasonal population dynamics of the allocreadiid trematode *Crepidostomum cornutum.* Over two hundred male and female crayfish (*Orconectes* sp.) were collected in 2007 (February to November) from Little Sugar Creek, a small stream east of Crawfordsville, Indiana, and examined for metacercariae of *C. cornutum*. Over 84% of the crayfish were infected with at least one metacercaria. Whereas there were significant correlations between metacercarial infection and crayfish size (both length and mass), host body mass best explained the infection intensities in crayfish in this system; this is likely related to pre-molt changes in body mass but not length during crayfish growth.

List of Participants
(Registered as of May 19, 2008)

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2004 Minnesota State University, Mankato, MN (LVI) Patrick Muzzall
Richard Clopton – Publishing with pain: The editor doesn't really hate you.
PO= Robert Sorensen, ST= Darwin Wittrock; H=Rebecca LaBorde;
L= Maria Castillo; HM= Angie Kuntz and Laura Duclos; C=Jenna Rodgers
S= Molecular phylogenetics of parasites by Vasyl Tkach and
Ramon Carreno

2005 Wabash College, Crawfordsville, IN (LVII) Douglas Woodmansee
John Adams - In a changing world of malaria research, can an old dog
learn new tricks? PO= Eric Wetzel, ST= Darwin Wittrock; H= Amy
McHenry; L= Laura Duclos; HM= Jillian Detwiler and Julie Clennon;
C= Kristin Giglietti; S= Molecular Phylogenies in Nematoda by Virginia
Ferris and Microbial Community Ecology of Tick-borne Human
Pathogens by Keith Clay

2006 Winona State University, Winona, MN (LVIII) Thomas McQuistion
Matthew Bolek - Amphibian parasites: The cool, the bad and the ugly.
PO= Kim Bates; ST= Doug Woodmansee; H= Andrew Claxton; L= Kristin
Herrmann; C= Lindsey Stillson; HM= Brenda Pracheil, Kristin Giglietti;
S= Parasites of Wildlife of the Midwest by Rebecca Cole and Darwin
Wittrock

2007 University of Wisconsin-Oshkosh, Oshkosh, WI (LIX) Jason Curtis
David Williams – The Genomics Revolution in Parasitology.
PO= Shelly Michalski, ST= Doug Woodmansee; H=?; L=? HM= ?;
C= ?, S= Tropical Disease by Gary Weil and Peter Fischer

2008 University of Illinois at Urbana-Champaign (LX) Milton McAllister
Dennis Minchella – P.C. (Post Cable) Parasitology at Purdue.
PO= Milton McAllister, ST= Doug Woodmansee; H=?; L=? HM= ?;
C= ?, S= Parasitic Protists by Laura Knoll and Alexa Rosypal.

2009 Ohio Wesleyan University, Delaware, OH (LXI)
PO= Ramon Carreno, ST= Doug Woodmansee; H=?; L=? HM= ?;
C= ?; S=?

3 Characterization of the *Sarcocystis neurona* merozoite surface antigen SnSAG5.**Carolyn A. Crowdus (UG)[1],** Antoinette Marsh[2] and Daniel K. Howe[1]. [1]Department of Veterinary Science, University of Kentucky, Lexington, KY 40546-0099 and [2]Department of Veterinary Preventive Medicine, College of Veterinary Medicine, The Ohio State University, Columbus, OH 43210-1092.

Sarcocystis neurona is an obligate intracellular parasite that causes equine protozoal myeloencephalitis (EPM). Previous work has identified a gene family of paralogous surface antigens in *S. neurona* called SnSAGs. These surface proteins are immunogenic in their host animals, and are therefore candidate molecules for development of diagnostics and vaccines. However, it has been found that SnSAG diversity exists in strains of *S. neurona*, including the absence of the major surface antigen gene *SnSAG1*. Notably, sequence for an alternative SnSAG has been observed in two of the SnSAG1-minus strains. In the present study, data were produced to characterize this new surface protein, which we have designated SnSAG5. The results indicated that the protein encoded by the *SnSAG5* sequence is indeed a surface-associated molecule that has characteristics consistent with the other SAGs identified in *S. neurona* and related parasites. Importantly, Western blot analyses of a collection of *S. neurona* strains demonstrated that six of thirteen parasite isolates express SnSAG5 as a dominant surface protein instead of SnSAG1. Conversely, SnSAG5 was not detected in SnSAG1-positive isolates. One strain isolated from the brain of a sea otter did not express either SnSAG1 or SnSAG5. Genetic analysis with *SnSAG5*-specific primers confirmed the presence of the *SnSAG5* gene in the six Western blot-positive strains, while also suggesting the presence of a novel *SnSAG* sequence in the otter isolate that did not express either SnSAG1 or SnSAG5. The findings provide further indication of *S. neurona* strain diversity, which has implications for serological testing and development of vaccines against EPM as well as the population biology of *Sarcocystis* cycling in the opossum definitive host.

4 Analysis of genetic variation between strains of *Isospora sp* from two isolated populations of *Dendrocincla mercula* (Passeriformes) native to South America. **Frederik Rebling (UG)**,[1] Thomas McQuistion,[1] and Samuel Galewsky.[1] [1]Department of Biology, Millikin University, Decatur, IL 62522.

Parasite isolates of the genus *Isospora* have been found in fecal samples from *Dendrocincla mercula* populations, one which resides in Peru and the other in

Guyana. Due to differences in oocyst size, it is not clear if the isolates belong to the same species. This research study has determined that the size difference in oocyst morphology is not a significant marker for taxonomic classification. We compared the ITS region and the 5.8S rDNA gene unit from the two isolates and found a high degree of sequence similarity, which indicates that the Peru and Guyana isolates belong to the same species. Further investigation focused on the viability of the 5.8S rDNA gene unit as a marker for taxonomic classification. The 5.8S rDNA sequence of the Peru isolate was compared to various parasites in the suborder Eimeriorina. Our sequence alignment results indicate that the 5.8S rDNA gene unit is a viable marker for taxonomic classification of parasites in the suborder Eimeriorina.

5 Endoparasites in bobcats (*Felis rufus*) from southern Ohio. **Rachel E. Shanks, (UG)**[1], Suzie Prange[2], and Ramon A. Carreno[1], [1]Department of Zoology, Ohio Wesleyan University, Delaware, OH 43015, USA.[2]Ohio Division of Wildlife, Waterloo Wildlife Research Station, Athens, Ohio 45701.

The bobcat (*Felis rufus*) was extirpated from Ohio in 1850. Common in adjacent states, a few sightings of bobcats are made annually in Ohio, usually in southeastern portions of the state. However, the species is still considered to be endangered in Ohio. A total of 25 bobcats collected from eleven counties in southern Ohio were examined for endoparasites. Parasites identified included 1 cestode and 5 nematodes. No trematodes were recovered. Species identified included *Molineus barbatus*, *Toxascaris leonina*, *Taenia rileyi*, *Capillaria sp.*, *Ancylostoma sp.*, and *Vogeloides felis*. Parasite prevalence, location, age, and gender of *F. rufus* were compared, showing that adult male bobcats had the highest percentages of infection. Infection of certain parasites was not dependent upon location, although a larger sample size in the future may be necessary to validate those data.

6 *Babesia spp.*, a causative agent for an emerging tick-borne disease, was amplified from tick DNA to determine prevalence in sample area along with co-infection with *Borrelia burgdorferi*. **Hannah Wilder (UG)**, Kimberly Bates and David Essar. Department of Biological Sciences, Winona State University, Winona, MN 55987.

In Minnesota and Wisconsin, the deer tick, *Ixodes scapularis*, is a primary vector for a variety of disease causing pathogens. A few of these diseases include: Lyme disease, caused by a spirochete *Borrelia burgdorferi*, Babesiosis, caused by protozoan *Babesia microti*, and Human Anaplasmosis caused by a rickettsia *Anaplasma*

1993	St. Mary's, Notre Dame, IN, (XLV) R. A. Grassmick J. Crites, AMCOP Peragrare Anni, Homines, Exitus PO=T.R Platt, ST=D.M.Miller, H=M. S. Schoen, L=B. J. Davids, S="Ain't Misbehavin'": Ethology, Phylogeny and Parasitology
1994	Murray State Univ. Murray, KY (XLVI) Gary Uglem E. Christiansen, Come out, come out, we know you are in there PO=L. Duobinis-Gray, ST=D. J. Minchella, H=J. Rosinski, L=R. Garrison, S=Parasite Ecology: Population and Community Dynamics
1995	Univ. of Wisconsin-Milwaukee (XLVII) Darwin Wittrock E.S. Loker, Schistosomiasis in Kenya: a Copernican point of view PO= J. Coggins, ST=D.J. Minchella; H=J. Curtis; L=M. Dwinnell S=Water-borne Diseases
1996	Northeast MO State Univ., Kirksville, MO (XLVIII) Daniel Snyder PO=L. C. Twining, ST=D.J. Minchella, H= V. G. Mehta, L=H. Yoder, S=Immune Aspects of Protozoan Infections: Malaria and Amoebiasis
1997	Butler University, Indianapolis, IN, (XLIX) Joe Camp R. Hengst, Paleoparasitology, PO=D. Daniell; ST=D.J. Minchella; H=A. Bierberich, L=S. Kappe, S=Molecular Biology in Solving Problems in Parasitology
1998	Indiana State University, Terre Haute, IN (L) Jim Coggins W. Coil, J. Crites, & T. Dunagan, AMCOP 50 - Fifty Years Revisited; PO=F. Monroy & D. Dusanic; ST=D. Wittrock; H=M. Bolek; L=K. Page S= Cytokines and Parasitic Diseases; Visit by ASP President John Oaks
1999	Wilmington College, Wilmington OH (LI) Dennis Minchella P. LoVerde, Molecular Biology of Schistosomes, PO= D. Woodmansee, ST=D. Wittrock; H= J.B.Green; L=J. Curtis; S=Parasite Biochemistry by J.D. Bangs and C.F. Fioravanti.
2000	University of Notre Dame, Notre Dame, IN (LII) Peter Pappas J.A. Oaks – Zen and the Art of Tapeworms PO= J. H. Adams; ST= D. Wittrock; H= A. Eppert; L= M. Bolek; HM= C. Dresden-Osborne & K. VanBuskirk S=Life Style Choices of Parasitic Protozoans by T. Sinai and J. Lebowitz
2001	Eastern Illinois University, Charleston, IL (LIII) Lin Twining R.D. Smith - Environmental contamination with *Cryptosporidium parvum* from a dairy herd. PO= J. Laursen; ST= D. Wittrock; H= B. Foulk; L= M. Michalski ; HM= M. Gillilland III; B. Balu and P. Blair S= Use of Molecular Data in Parasite Systematics by M. Mort and M. Siddall
2002	Millikin University, Decatur, IL (LIV) David Williams P. Brindley – Mobile genetic elements in the schistosome genome PO=Tom McQuistion; ST= D. Wittrock; H= Stacy Pfluger; L= Greg Sandland; HM= Kelly VanBuskirk and Michelle Steinauer S= Parasite Transmission and Control in Domesticated Animals by M. McAllister and L. McDougald
2003	Michigan State University, East Lansing (LV) Tom Platt Robert Pennock – Darwin and the Parasitic Wasp: Teaching Evolutionary Design; PO= Pat Muzzall; ST= Darwin Wittrock; H= Luis Gondim; L= Michelle Steinauer; HM= Shawna Cook and Ahmed Sayed; C= Katie Reif; S= Vector Borne Diseases of Michigan and Adjacent States by Ned Walker and Hans Klompen

1980 Eastern Michigan Univ., Ypsilanti, MI (XXXII) A.D. Johnson
J.R. Williams, Tropical Parasitiology at the Junction of the White and Blue Nile Rivers. PO=E. Waffle, ST=G. Garoian, H=C.L. Williams, L=M. Goldman, L=R. Gamble, S=Functional Morphology of Acanthocephala

1981 Eastern Illinois Univ., Charleston, IL (XXXIII) D.M. Miller
G.D. Cain, Antigenic Variation: New Techniques Applied to Old Problems. PO=B.T. Ridgeway, ST=G. Garoian, H=J.M. Holy, L=B.N. Tuggle, S=Immunity to Protozoan Parasites

1982 Western Illinois Univ., Macomb, IL (XXXIV) D.G. Myer
J.D. Briggs, Biological Control of Invertebrates in International Programs. PO=P.M. Nollen, ST=G. Garoian, H=D.E. Snyder, L=C.L. Williams, S=Biological Control of Organisms

1983 Univ. of Illinois, Urbana, IL (XXXV) C.M. Vaughn
H.M. Moon, Speculations on the Pathogenesis of Cryptosporidiosis with Comparisons to Other Enteric Infections. PO=K.S. Todd, Jr, ST=G. Garoian, H=K.J. Hamann, L=K.W. Bafundo, S=Intestinal Protozoa

1984 Univ. of Iowa, Iowa City, IA (XXXVI) W.H. Coil
J. Donelson, Genetic Rearrangement and the Basis of Antigenic Variation in African Trypanosomes. PO=G.D. Cain, ST=G. Garoian, H=K.F. Forton, L=D. Woodmansee, S=Helminth Immunology

1985 Ohio State Univ., Columbus, OH (XXXVII) B.T. Ridgeway
K.D. Murrell, Epidemiology of Swine Trichinosis: Could Both Zenker and Leuckart be Right?, PO=P.W. Pappas, ST=G. Garoian, H=R.L. Lavy, L=H.K. Forton, S=Physiological Ecology of Parasites

1986 Univ. of Missouri, Columbia, MO (XXXVIII) G.D. Cain
R.C. Tinsley, Correlation of Host Biology in Polystomatid Monogenea. H=M.C. Lewis, H=I.G. Welsford, L=D.A. Leiby, PO=L. Uhazy, ST=D.M. Miller, S=Gene Expression in Helminth Development

1987 Southern Illinois Univ., Edwardsville, IL (XXXIX) P.M. Nollen
K. Kazacos, *Baylisascaris* Nematodes-Their Biology and Role in Larva Migrans Disease. PO=D. Myer, ST=D.M. Miller, H=D.A. Leiby, L=V.A. Conners, S=Modern Systematics in Parasitology

1988 Purdue University, West Lafayette, IN (XL) G. Garoian
W.H. Coil, Forty Years of AMCOP, Laying a Foundation. PO=K. Kazacos & D. Minchella, ST=D.M. Miller, H=R.A. Bautz, L=R.R. Mitchler, S=Host Parasite Genetics

1989 Miami Univ., Oxford, OH (XLI) A.E. Duwe
G. Castro, A Physiological View of Host-parasite Interactions. PO=R.A. Grassmick, ST=D.M. Miller, H=S.R. Morris, S=Parasites in the Immune Suppressed, Special Visit by President Kemp of ASP.

1990 Univ. Illinois, Urbana, IL (XLII) J. H. Hubschman
G. Cross, Phosphatidylinositol Membrane Anchor and/or Transfection of Protozoa. PO=G. McLaughlin, ST=D.M. Miller, H=L.D. Morton, L=S.R. Morris, S=Defining the Limits of Integrated Pest and Disease Management.

1991 University of South Dakota, Vermillion, SD, (XLIII) K. R. Kazacos
M. Dryden, What You Always Wanted to Know About Fleas on Fluffy and Fido but were Afraid to Ask. PO=A. D. Johnson, ST=D.M Miller, H=D. Royal, L=R. Clopton, S= Host Specificity

1992 Univ. Wisconsin-Eau Claire, WI, (XLIV) Omer Larson
PO=D. Wittrock, ST=D.M.Miller, H=S. Storandt, L=D. K. Howe, S=Teaching of Parasitology-New Methods; Visit by ASP President J. Seed

phagocytophilum. It has been reported that the prevalence of Lyme disease is higher in Minnesota and Wisconsin than Babesiosis. Recently, studies have indicated an increase in co-infection of Babesiosis and Lyme disease within it's range. In 2005-2006, 1031 *Ixodes scapularis* ticks were collected and DNA was extracted. The DNA was amplified by polymerase chain reaction (PCR) using *Borrelia* specific primers. Of the 1031 ticks collected only 1015 were analyzed with an overall prevalence of 13.69% (139 out of 1015). Minnesota had a higher prevalence with 15.79% (78 out 494) than Wisconsin with 11.62% (61 out of 525). More recently, the same DNA samples have been re-amplified using *Babesia* specific primers. The overall prevalence of *Babesia* was 11.54% (111 out of 962) after analysis of 962 ticks out of the 1031 collected ticks in 2005-2006. Wisconsin had a higher prevalence with 12.83% (63 out of 491) than Minnesota, which had a prevalence of 10.19% (48 out of 471). Co-infection of *Borrelia burgdorferi* and *Babesia spp.* showed a total prevalence of 1.87% (18 out of 962). Wisconsin also had a higher prevalence of 2.24% (11 out of 491) than Minnesota with 1.49% (7 out of 471). The goals of this study were to determine the prevalence of *Babesia* in *Ixodes scapularis* ticks in Southern Minnesota and Western Wisconsin, and determine the prevalence of co-infection with *Borrelia burgdorferi*. Another aspect of this research was to determine if the Mississippi River could provide an effective barrier in preventing the spread of *Babesia* into Minnesota.

7 Parasites of the northern river otter, *Lontra canadensis*, in Ohio with comments on the systematics of *Baschkirovitrema incrassatum* (Diesing, 1850) Skrjabin, 1944. **Sam Valerius (UG)** and Ramon A. Carreno, Department of Zoology, Ohio Wesleyan University, Delaware, Ohio 43015.

The North American river otter, *Lontra canadensis*, was reintroduced in Ohio through a seven year program beginning in 1986. Since then river otters have expanded throughout Ohio and their population has grown from the original 123 reintroduced otters to estimates of up to 6000. Endoparasites were collected from otters trapped in Ohio during the 2005 season. *Baschkirovitrema incrassatum* was found in 42% of otters examined, 12% contained *Enhydrodiplostomum alarioides*, 7% contained *Clinostomum* sp., and 5% were infected with acanthocephalans. A considerable difference was found between infections of *B. incrassatum* in otters between counties, with only 5 of the 16 examined counties found to have infected otters. The phylogenetic affinities of *Baschkirovitrema incrassatum* were assessed using sequences from the mitochondrial gene nicotinamide adenine dinucleotide dehydrogenase subunit 1 (ND1). The sequences generated

were compared to available sequences from other members of the Echinostomatidae. *Baschkirovitrema incrassatum* was found to be a sister group of *Echinostoma hortense*, which has recently been redescribed as *Isthmiophora hortense*. A comparison of morphological characteristics between *B. incrassatum*, *I. hortense*, and other species in the genus I*sthmiophora* supports the general phylogenetic pattern and raises questions on the validity of *Baschkirovitrema*.

8 Identification of genes involved in mosquito infectivity for *Brugia pahangi*. **Kathryn Griffiths (GS)**[1], Sara Erickson[2], Jeremy Fuchs[2], Bruce Christensen[2] and Shelly Michalski[1]. [1]Biology and Microbiology Department, University of Wisconsin–Oshkosh, Oshkosh, WI 54901 and [2]Department of Pathobiology, University of Wisconsin–Madison, Madison, WI 53706.

Filarial worms are arthropod-borne nematodes that cause a variety of economically important diseases such as onchocerciasis (river blindness), lymphatic filariasis, and heartworm disease. It has previously been demonstrated that older microfilariae (mf) (> 7 days old) can infect the Aedes aegypti Liverpool mosquito strain, while younger mf (< 7 days) cannot. This suggests that a maturation process must take place within the definitive host that is necessary for disease transmission. This maturation process appears to involve changes in microfilarial surface composition. We have used microarray hybridization technology to assess the transcriptional profile changes associated with Brugia pahangi microfilarial maturation within the mammalian host. To date, we have identified 95 transcripts that are differentially abundant in immature mf, and 64 in mature mf. In this presentation I will report the preliminary data analysis of the transcriptome changes involved in microfilarial maturation that allow infection of the intermediate host in this model system.

9 *Amblyomma* & *Borrelia:* Combining field surveys and molecular diagnostics in the study of *Borrelia lonestari* in Illinois. **Brandon Jutras (GS)**, [1] Jeffrey Laursen,[1] Zhiwei Liu.[1] [1]Department of Biological Sciences, Eastern Illinois University, Charleston, IL 61920.

The lone star tick, *Amblyomma americanum* (Ixodidae, Acarina, Arachnida), is a hard tick known for its aggressive feeding behavior. It is unique in that it will readily feed on humans during every life stage. It has been reported that the lone star tick is capable of transmitting five different human pathogens. It has also been linked to the spirochete *Borrelia lonestari*, which is thought to cause symptoms similar to those of Lyme disease. 1696 adult and nymph lone star

1963	Univ. of Minnesota, St. Paul, MN (XV)	M.F. Hansen
	F.G. Wallace, Observations on the Louisiana State University Inter-American Program in Tropical Medicine. ST=D.T. Clark	
1964	Univ. of Chicago, Chicago, IL (XVI)	D.T. Clark
	R.E. Kuntz, Paragonimiasis in Formosa. ST=E. J. Hugghins	
1965	Kellogg Biological Station, Gull Lake, MI (XVII)	P.E. Thompson
	L. Jacobs, Toxoplasmosis. ST=E.J. Hugghins	
1966	Univ. of Illinois, Urbana, IL (XVIII)	M.J. Ulmer
	D.L. De Guisti, The Acanthocephala. ST=E.J. Hugghins	
1967	Iowa State Univ., Ames, IA (XVIV)	P.J. Silverman
	N.D. Levine, Parasitology, Problems and Promise. ST=E.J. Hugghins H=P.M. Nollen [FIRST HERRICK AWARD]	
1968	Univ. of Wisconsin, Madison, WI (XX)	F.G. Wallace
	D.R. Lincicome, The Goodness of Parasitism. (with APS & AIBS) ST=J.H. Greve, H=W.G. Barnes	
1969	Univ. of Cincinnati, Cincinnati, OH (XXI)	H.W. Manter
	H.W. Stunkard, Life Histories and Systematics of Parasitic Flatworms. ST=J.H. Greve, H=B. Caverny, H=T.P. Bonner	
1970	Loyola Univ., Chicago, IL (XXII)	J.L. Crites
	M.J. Ulmer, Helminths from Midwest to Mediterranean. ST=J.H. Greve, H=H. Blankespoor	
1971	Univ. of Louisville, Louisville, KY (XXIII)	F. Etges
	H. Van der Schalie, Dam Large Rivers-Then What? ST=J.H. Greve, H=R. Campbell	
1972	Southern Illinois Univ., Carbondale, IL (XXIV)	B.J. Jaskowski
	R.M. Cable, The Lighter Side of Parasitology. PO=T.T. Dunagan, ST=J.H. Greve, H=E.M. Cornford	
1973	Notre Dame Univ., Notre Dame, IN (XXV)	R. Shumard
	R.F. Rick, Babesiosis and the Development of *Babesia* in Ticks. PO=R. Thorson, ST=J.H. Greve, H=D. Danley	
1974	Univ. of Michigan, Ann Arbor, MI (XXVI)	D. Ameel
	M.J. Ulmer, Snails, Swamps and Swimmer's Itch. ST=J.H. Greve, H=P.T. LaVerde and D. Prechel	
1975	Iowa State Univ., Ames, IA (XXVII)	W. Bemrick
	P.M. Nollen, Studies on the Reproductive Systems of Parasitic Flatworms or All You Wanted to Know About Sex in Worms and Were Afraid to Ask. ST=J.H. Greve, H=D. Wittrock, L=V.M. Nelson [FIRST LARUE AWARD]	
1976	Univ. of Nebraska, Lincoln, NE (XXVIII)	J. Greve
	A.C. Todd, A Redefinition of Subclinical Parasitism and its Impact on World Politics. ST=W.H. Coil, PO=M.H. Pritchard, H=W.L. Current, L=C.A. Klu	
1977	Kansas State Univ., Manhattan, KA (XXIX)	T.T. Dunagan
	A.J. MacInnis, Snails, Dollars, DNA and Worms. PO=W.D. Lindquist, ST=W.H. Coil, H=M. Fletcher, L=L. Smurro, L=J. Ketchum	
1978	Indiana Central Univ., Indianapolis, IN (XXX)	E.J. Hugghins
	J.P. Dubey, Recent Advances in Feline and Canine Coccidia and Related Organisms. PO=M. Brandt, ST=W.H. Coil, H=D. McNair, L=G.L. Hendrickson	
1979	Loyola Univ., Chicago, IL (XXXI)	D.E. Gilbertson
	E. Foor, Basic Studies in Reproduction (in Nematodes). PO=B.J. Jaskowski, ST=W.H. Coil, H=G. Plorin, H=D. Minchella, L=M. Fletcher	

shall traditionally be $100. Awards may vary according to funds available from contributors.

(c) No person may win the same award more than one time while in student status. Likewise, no student may win both awards at the same meeting. However, one person may win both awards while a student in different years.

SUMMARY OF AMCOP MEETINGS 1949-PRESENT

Year	Meeting Site (Conference No.)	Presiding Officer
Banquet Speaker & Title, PO=Program Officer, ST=Secy/Treas, H=Herrick Award, L=LaRue Award, HM=Honorable Mention, C=Cable Undergraduate Award; S=Symposium Title and Speakers		
1949	Univ. Wisconsin, Madison, WI (AMCOP I) J.C. Baer, ST=J. R. Lincicome	Harley J. VanCleave
1950	Univ. Michigan, Ann Arbor, MI (II) W.W. Cort, Trends in Helminthological Research. PO/ST=R. J. Porter	R.V. Bangham
1951	Purdue University, Lafayete, IN (III) J.E. Ackert, Some Observations on Hookworm Disease. ST=W. Balamuth	L.O. Nolf
1952	Univ. Illinois, Urbana, IL (IV) A.C. Walton, ST=W. Balamuth	R.J. Porter
1953	Iowa State College, Ames IA (V) R.M. Cable, Parasitological Experiences in Puerto Rico. ST=W.D. Lindquist	C.A. Herrick
1954	Michigan State Univ., East Lansing, MI (VI) G.F Otto, Mosquitos, Worms, Somoans and the Parasitologist in Somoa. ST=W.D. Lindquist	A.C. Walton
1955	Notre Dame Univ., IN (VII) G.R. LaRue, Relationships in the Development of Digenetic Trematodes. ST=W.D. Lindquist	R.M. Cable
1956	Iowa State University, Ames, IA (VIII) W.H. Headlee, ST=F.J. Krudenier	W.D. Lindquist
1957	Univ. of Michigan, Ann Arbor, MI (IX) A.C. Chandler, ST=F.J. Krudenier	J.E. Ackert
1958	Kansas St. Univ., Manhattan, KS (X) H.W. Manter, Trematodes of Many Waters. ST=F.J. Krudenier	G.R. LaRue
1959	Northwestern Univ., Evanston, IL (XI) H. Van der Schalie, Contrasting Problems in Conrol of Schistosomiasis in Egypt and the Sudan. ST=D.T. Clark	G.F. Otto
1960	Purdue Univ., Lafayette, IN (XII) P.P. Weinstein, Aspects of Growth and Differentiation of Parasitic Helminths *in vitro* and *in vivo*. ST=D.T. Clark	F.J. Krudenier
1961	Ohio State Univ., Columbus, OH (XIII) B. Schwartz, Parasitology Old and New. ST=D.T. Clark	N.D. Levine
1962	Univ. of Nebraska, Lincoln, NE (XIV) O.W. Olsen, The Life History of the Hookworm of Fur Seals. ST=D.T. Clark	G.W. Kelley, Jr

ticks were collected from the Crab Orchard Wildlife Refuge in southern Illinois from May through August 2007. Microclimate variables and tick densities were quantified in an attempt to determine factors that may influence relative abundance. PCR assays were developed to determine the prevalence of *Borrelia lonestari* in Illinois, the putative agent of STARI. These data suggest that *A. americanum* are highly established in southern Illinois; the populations appear to be effected by the percent relative humidity and proximity to watersheds. To date 49 of the 748 lone star ticks screened tested positive for *B. lonestari*, a prevalence of 6.55% screened. The current study suggests the presence of *B. lonestari* in Illinois, which is the first report of the spirochete in the state.

10

Describing the spatial distribution of parasites on *Peromyscus* species in southern Michigan. **Erica L. Mize (GS)**[1], Brian A. Maurer[1], Jean I. Tsao[1,2], and Barbara L. Lundrigan.[3,4] [1]Department of Fisheries and Wildlife, Michigan State University, East Lansing, MI 48824, [2]Department of Large Animal Clinical Sciences, Michigan State University, East Lansing, MI 48824, [3]Department of Zoology, Michigan State University, East Lansing, MI 48824 and [4]Michigan State University Museum, East Lansing, MI 48824.

Parasites are important vectors for many diseases, including zoonotic diseases such as Lyme Disease. The ability to predict the distribution of disease vectors could have far-reaching applications in conservation and human health. The goal of this study is to evaluate the role of habitat in determining parasite distribution. 209 *Peromyscus* spp. mice from 6 study sites in southern Michigan were collected and examined for parasites during the summer of 2007. All ecto-parasites were removed from the mice in the field or later in the lab, counted, and identified. 59 Ixodid ticks were found at 10 of 66 study plots. Vegetation data were collected from the study plots using the IFMAP protocol. The vegetation, *Peromyscus*, and Ixodid data were analyzed using principal component, divisive clustering, and discriminate function analyses to distinguish the differences between plots without *Peromyscus*, with nonparasitized *Peromyscus* and with *Peromyscus* parasitized by Ixodid ticks. There was significant separation of the three groups. Plots without mice were characterized by high canopy basal area of red pine (*Pinus resinosa*) and red oak (*Quercus rubra*) as well as high density of grasses as the primary ground cover. Plots where *Peromyscus* without ticks were present had high canopy basal area of white pine (*Pinus strobes*) and red oak (*Quercus rubra*), tall sub-canopy dogwood (*Cornus spp.*), sassafras (*Sassafras albidum*), white pine (*Pinus strobes*) and red maple (*Acer rubrum*). Plots where Ixodid ticks were found parasitizing *Peromyscus* mice were

characterized by high canopy basal area of black ash (*Fraxinus nigra*), red maple (*Acer rubrum*), and black cherry (*Prunus serotina*), high densities of seedlings and grasses as primary ground cover and barren ground for both primary and secondary ground cover as well as tall sub-canopy quaking aspen (*Populus tremuloides*). We will use similar techniques to determine the associations of vegetation with fleas, lice and mites.

11 Comparing patterns of schistosome genetic diversity and population structuring in two Brazilian villages. **Elizabeth A. Thiele (GS)**[1], Robert E. Sorensen[2], Andrea Gazzinelli[3], Dennis J. Minchella[1]. [1] Department of Biological Sciences, Purdue University, West Lafayette, IN 47907, USA, [2] Department of Biological Sciences, Minnesota State University Mankato, Mankato, MN 56001, USA, [3] Escola de Enfermagem, Universidade Federal de Minas Gerais, Belo Horizonte, MG, Brazil.

The digenean trematode *Schistosoma mansoni* is responsible for debilitating and chronic schistosomiasis in over 200 million people worldwide. In Brazil alone, an estimated 35 million people live at continual risk of infection. In order to evaluate epidemiological patterns among human definitive hosts, we assessed the genetic diversity and population subdivision of *S. mansoni* infrapopulations in patients from a highly endemic village in the state of Minas Gerais, Brazil. Parasite eggs were isolated from fecal samples collected from 30 patients, passaged through lab-strain *Biomphalaria glabrata* snails and BALB/c mice, and adult worms were acquired and genotyped at 8 microsatellite loci. Genetic diversity of parasites was relatively high (HS 0.63) and standard measures of inbreeding indicated a significant excess of heterozygotes (F¬¬ST -0.019). Furthermore, measures of population subdivision indicated significant but low levels of population partitioning (FST 0.052; F´ST 0.15). We conclude that patients within this village are sampling a broad range of schistosome genetic diversity and are effectively acting as "genetic mixing bowls" for the parasites. These results contrast with those previously observed in another Brazilian village, and thus provide the opportunity for comparisons of environmental and epidemiological differences that are likely to influence host-parasite coevolution and parasite transmission.

5. The Secretary/Treasurer shall issue annual dues notices and about four months prior to each Conference a call for participants in the program for each Conference; inform the new Presiding and Program Officers concerning their duties and the members of the Policy Committee of their tenure and the Secretary of the American Society of Parasitology within three weeks after the annual election; serve as member without vote and the Secretary of the Policy Committee: and supervise all funds of the Conference.

6. The Program Officer shall be responsible for the general format of the Conference and for arranging suitable facilities and funding. It shall also be this person's responsibility to chair the special committee to determine and collect the registration fee for the Conference. The format of the Conference may vary, but should include both a demonstration session and a session of contributed papers, both open to all members. A symposium may also be included or may replace a session of contributed papers.

7. The Policy Committee shall determine by majority vote all matters of procedure and policy pertaining to the Conference upon which decision must be reached between consecutive Conferences, as well as all matters referred specifically to it by the membership. Such a vote may be requested by any member of the Conference but must be directed through the Secretary/Treasurer. The Chairperson of the Policy Committee shall request approval by the membership for all decisions of the Committee at the earliest subsequent business meeting of the Conference.

8. The Conference confers three major awards during its annual meeting to student participants. These are the Chester A. Herrick Award, sponsored by the Eli Lilly Co., for the best poster/demonstration of parasitological research, the George A. LaRue Award for the best oral presentation of parasitological research, and the Raymond M. Cable Award for best presentation given by an undergraduate student. Honorable mention awards will be given to the second place poster/demonstration and second place oral presentation at the discretion of the awards committee. All awards except for the Herrick Award are supported by donations from the AMCOP membership.

9. (a) The winner of each award will be selected by a 3-person committee appointed at each annual meeting by the Presiding Officer. The criteria for judgment will be established each year by the committee.

   (b) The size of the Herrick and LaRue awards shall traditionally be $300.00. The Cable undergraduate award and honorable mention awards

2. The officers are a Presiding Officer, whose term of office is one year or until a successor is elected (normally the term expires with adjournment of the annual Conference over which the person presides); a Secretary/Treasurer, whose term of office is two years or until a successor is elected; a Program Officer whose term of office is one year; and a Policy Committee composed of the last five available retired Presiding Officers plus, *ex officio* and without vote, the current Presiding Officer and Secretary/Treasurer. All terms of office of each full member of the Policy Committee is five years, or so long as the person is one of the five most recent, available Presiding Officers. The most recent past Presiding Officer available chairs the Policy Committee and is the Vice-President of the current Conference.

3. The Presiding Officer, the Secretary/Treasurer, and the Program Officer are elected by a majority vote of those members attending a regularly scheduled business meeting of the Conference or by a majority vote of those replying to a mail ballot of the membership.

4. The Presiding Officer shall preside at all meetings of the Conference and shall arrange for a banquet speaker. On the first day of a Conference the Presiding Officer shall appoint the following committees, which shall serve until they have reported on the last day of the annual Conference:

   (a) Nominating Committee,

   (b) Committee to Recommend Future Meeting Places,

   (c) Committee to Suggest Program Possibilities for Future Meetings,

   (d) Resolutions Committee,

   (e) Judging Committee,

   (f) Audit Committee,

   (g) such other *ad hoc* committees as may be required.

   The Presiding Officer shall appoint the Conference Representative to the Council of the American Society of Parasitologists for the year, who must be a member of that society. The current Presiding Officer serves as a member without vote of the Policy Committee.

12 Distribution of the snails associated with waterbird mortality in Lake Onalaska, Wisconsin. **Emily M. Koppel (GS)**, and Robert E. Sorensen, Department of Biological Sciences, Minnesota State University, Mankato, Mankato, MN 56001.
AUTHORS

Waterbirds have been dying of trematodiasis on Pool 7 of the Upper Mississippi River Wildlife and Fish Refuge since 2002 (Lake Onalaska). Two trematodes, *Cyathocotyle bushiensis* and *Sphaeridiotrema globulus*, have been implicated in the mortality of the waterbirds. These trematodes are transmitted to waterbirds when the birds consume infected exotic aquatic *Bithynia tentaculata* snails. These snails were previously found in high densities near manmade islands in Pool 7. Waterbirds that experience the heaviest mortality generally feed in open water rather than rocky shallows like those found around the islands; therefore, it is important to sample open water areas of Pool 7 to identify where birds could encounter infected snails. Open water sampling also allows us to examine native snails for the presence of *C. bushiensis* or *S. globulus*. During the summer of 2007, open water sites were sampled and 1,337 live snails were dissected and examined for larval trematodes. *Bithynia tentaculata* showed open water infection rates similar to those of snails previously sampled from the islands. The native snails *Amnicola limosa*, *Physa acuta*, and *Gyraulus parvus* were also found to be infected with metacercariae resembling *S. globulus*, but in lower densities than found in *B. tentaculata*. A very small number of *A. limosa* also contained metacercariae similar to *C. bushiensis*. Of the 681 individuals of other snail species examined, none contained metacercariae resembling *C. bushiensis*. These results suggest that open water areas and native snails may impact the infection rate of waterbirds on Pool 7.

13 Phylogenetic analyses of globally distributed echinostome parasites and comparative population genetics of North American species. **Jillian Detwiler (GS)**,[1] David H. Bos,[1] Dennis J. Minchella.[1] [1]Department of Biological Sciences, Purdue University, West Lafayette, IN 47907.

Parasites require particular abiotic habitats and specific hosts to complete their complex life histories. Yet, we have little understanding how these ecological constraints affect parasite diversity, especially for parasite species that have wide geographic distributions. Echinostome trematodes are one group of parasites that exemplify these features. They are an extremely rich species-group characterized by broad host specificity and cosmopolitan species distributions. Like most parasites, echinostomes have cryptic morphological stages, potentially cryptic

species, and unresolved species phylogenies. In this study we 1) improved the resolution of the echinostome phylogeny and 2) evaluated the effect of habitat stability on echinostome diversity. For the first goal, we determined how novel North and South American echinostome isolates were related to previously sequenced isolates from Europe, Asia and Australia. For the second goal, we used the molecular phylogeny to confirm species lineages and then compared the genetic diversity of two echinostome species in two different ecological habitats (permanent lake and ephemeral pond). For the phylogenetic analyses, over 150 field-collected individuals from Minnesota, Wisconsin, Indiana and Brazil were sequenced at two mitochondrial genes CO1 and ND1. Within North America, the same *Echinostoma revolutum* haplotypes occurred at two different geographic sites, but most echinostome species' haplotypes were unique to a geographic location. More surprisingly, closely related haplotypes were found between Europe and North America suggesting gene flow between the two continents. For the comparative population genetics, approximately 50 individuals from two echinostome species (*E. revolutum* and *Echinoparyphium* sp.) collected from a lake and a pond in Indiana were sequenced at the CO1 gene. We predicted that the permanent lake would support a greater diversity of parasite haplotypes than the ephemeral pond because of increased host use and longevity. Contrary to our predictions, the freshwater habitats supported similar levels of haplotype diversity. Furthermore, molecular signatures from the *E. revolutum* population at the permanent lake indicate a recent population expansion rather than a stable population. The two echinostome species occupying the same ephemeral pond were characterized by similar haplotype diversity levels and stable population dynamics. Overall, our study provides both a global and local view that parasite lineages can frequently migrate and mix with other lineages over large and small spatial scales despite numerous ecological constraints. Furthermore, different abiotic habitats sustained similar levels of parasite genetic diversity despite the differences in the temporal availability of habitat.

14 An unusually severe infection of *Collyriclum fara* in an American crow *Corvus brachyrhynchos*. **Mauritz C. Sterner**, David E. Green, and Rebecca A. Cole, United States Geological Survey, National Wildlife Health Center, 6006 Schroeder Road, Madison Wisconsin, 53711.

An adult female American crow (*Corvus brachyrhynchos*) from Maryland was presented to the National Wildlife Health Center in Madison Wisconsin with numerous nodules around the vent area. The nodules had coalesced forming one large growth that completely

THE ANNUAL MIDWESTERN CONFERENCE OF PARASITOLOGISTS (AMCOP)

OBJECTIVES AND ORGANIZATION

A restatement to incorporate changes approved in 1989. Earlier statements have been approved in 1948, 1953, 1971, 1972, 1973, 1974, 1986, 2003 and 2004.

NAME

The organization shall be known as the ANNUAL MIDWESTERN CONFERENCE OF PARASITOLOGISTS (AMCOP), hereinafter referred to as the Conference.

AFFILIATION

The Conference is an affiliate of the American Society of Parasitologists.

OBJECTIVES

The Conference is a gathering of parasitologists and students of parasitology for the purpose of informal discussion of research and teaching in parasitology and the furthering of the best interests of the discipline of parasitology.

MEMBERS

The Conference is open to all interested persons regardless of place of work, residence, or affiliation in other recognized societies. There are three categories of membership: Emeritus, Regular, and Student. When a member retires from industry, university or other professional occupation, that person shall be eligible for emeritus membership.

DUES

Annual dues are required for emeritus, regular and student membership. A registration fee is charged during registration at annual conferences. The amount of this fee will be decided for each Conference by a committee composed of the Presiding Officer, the Secretary/Treasurer, and the Program Officer, who is to serve as its chair. Dues are established by the Policy Committee and collected by the Secretary/Treasurer.

MEETINGS

The Conference is held in the general midwestern area during early to mid-June, unless otherwise specified by a majority vote of the previous Conference or a majority vote of those listed members replying by mail.

BYLAWS

1. Simple majority vote of members in attendance at regularly scheduled meetings of the Conference shall determine the policies of the Conference.

2007 AMCOP Financial Report
Final Report for 2007

Cash on Hand 1/1/07		$681.95
Liquidation of CD 1112038700		$2,500.00
Expenses		
AMCOP 59 Program Duplication	$159.70	
Postage	$45.00	
Certificate Holders	$47.78	
Herrick Award	$300.00	
LaRue Award	$300.00	
Cable Award	$100.00	
Honorable Mention Awards	$200.00	
Bank Fees	$0.00	
Office Supplies	$0.00	
Speaker Travel	$0.00	
Student Travel Awards	$150.00	
AMCOP 59 Cost Overun	$63.00	
Total Expenses		$1,365.48
Income		
2007 Dues Payments	$560.00	
Member Contributions	$812.00	
Lilly Donation	$300.00	
ASP Suport	$250.00	
Residual from AMCOP 58	$39.17	
Silent Auction Revenue	$126.00	
T-Shirt Sales	$408.00	
Interest (CD1112016750)	$371.23	
Interest (CD1112038700)	$62.33	
Total Income		$2,728.73
Cash on Hand As of December, 2007		$4,545.20
Approx. Value of CD 1112016750		$7,000.00
Net Worth As of December 31, 2007		$11,545.20

Submitted By:

Financial Report Approved by
2008 Auditing Committee:

Douglas B.
Woodmansee
Secretary/Treasurer

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surrounded the vent area making an exact count of nodules impossible but estimating well over twenty-five present. Each nodule contained two trematodes identified as *Collyriclum faba*, and massive number of small brown eggs. This trematode is most commonly reported in passerines and galliformes with the average infection consisting of three to four nodules and only an occasional occurrence of this parasite reported in corvids. Necropsy revealed unusually large numbers of nodules within the body cavity. Each internal nodule also contained two trematodes and large numbers of eggs. Histological sections taken of the external and internal nodules revealed thick-walled fibrosing, verminous, granulomas indicating a severe reaction of the host to the presence of the parasites. Internal granulomas in the messentary resulted in adhesions of the intestine to the messentary, surrounding body cavity and other portions of the small and large intestine. Due to the large number of nodules around the vent and internal damage resulting from nodules within the body cavity it is believed that the infection of *Collyriclum faba* was a contributing factor in the death of this bird.

15 Developing a Digital Video Web Resource for Parasitology Education. **Shelly Michalski**, Biology and Microbiology Department, University of Wisconsin–Oshkosh, Oshkosh, WI 54901.

Pedagogical methods are becoming increasingly web-based due to the ease of publication, wide variety of materials available, and student demand for these technologies. While parasitology video clips are available from different places on the internet, they are widely scattered and often specialized. This presentation is a proposal to the members of AMCOP to fund server space at UWO to erect a dedicated database of parasitology video clips that will be accessible to parasitology instructors worldwide. Clips will be copyrighted by their submitters for educational use only, and tagged with a title and credits that cite the creator of the clip, subject, and sponsorship by AMCOP. This valuable resource is especially helpful for those at institutions where demonstration of live systems is prohibitive, and is immeasurably valuable for demonstrating concepts in parasitology to students whose only resource is a textbook and preserved specimens.

16 Identification of genes necessary for chronic infection by a parasite. **Laura J. Knoll**, University of Wisconsin, Madison WI.

Many microbes have a long-term relationship with their animal host. The parasite *Toxoplasma gondii* is one of the most widespread of all pathogens and can establish life-long colonization of any warm-

blooded host. *T. gondii* is well known for causing encephalitis in immunocompromised patients when the cyst stage reactivates. While the cyst of *T. gondii* is central to this host/microbe interaction, little is known about the molecular pathways that the parasite uses to establish a chronic infection and how that infection affects the host. My laboratory has used genetics to identify and characterize parasite genes that are essential for *T. gondii* to establish a chronic infection. For example, we have found that the rate of nucleocytoplasmic transport is important for *T. gondii* to survive nutrient limitation in vitro and in vivo. Along with the characterization of the genes necessary for infection, my laboratory will now use these mutants as a vaccine base and as tools to dissect the effects of a *T. gondii* infection on the host. Our resent results show that mice with a chronic infection of *T. gondii* are protected against lethal infection with highly pathogenic. The *T. gondii* mutants that are defective in their ability to form a chronic infection are useful for us to understand the mechanism of this protection. These results highlight that chronic infection with *T. gondii* may confer increased fitness to its host.

17 Emergence of canine leishmaniasis in the United States. **Alexa C. Rosypal**, University of North Carolina, Chapel Hill NC.

Insect-vectored parasites of the genus *Leishmania* cause a variety of diseases in people and animals. Visceral leishmaniasis is the most severe form of the disease and is usually fatal in humans is left untreated. Dogs are important reservoirs of human visceral leishmaniasis. Previously considered an exotic pathogen, *Leishmania infantum,* an etiologic agent of zoonotic visceral leishmaniasis, has recently emerged in the foxhound population in the United States and parts of Canada. *Leishmania* infections are usually spread to mammals by infected sand flies, however epidemiological data do not support a role for sand fly transmission in North America. Non-insect vector transmission has rarely been reported by blood transfusion, sexual contact, and maternal routes. Alternate transmission experiments in dogs and mice revealed vertical and direct transmission occurs with a United States' isolate of *L. infantum*. Although the strain of *L. infantum* infecting foxhounds in North America appears to predominantly use a non-vector transmission mode, the disease it produces is similar to canine leishmaniasis in other parts of the world. Seroprevalence studies indicate that this emerging pathogen appears to be limited to the foxhound breed in the United States. Antibody surveys have also revealed that the related parasite, *Trypanosoma cruzi*, is more widespread than previously recognized. Non-sand fly transmission may be responsible for maintaining infections in the United States' foxhound population. *L. infantum,* however, presents a public health

10. ELANCO Animal Health, a division of Eli Lilly Company, for its continued support of the C.A. Herrick Award for outstanding poster presentation,
11. The membership of AMCOP for support of the G.R. LaRue Award for outstanding platform presentation, the Honorable Mention awards, and the Raymond Cable Award for outstanding undergraduate presentation,
12. Members of AMCOP who contributed books, journals, and esoterica for the silent auction, and finally,
13. Dr. Doug Woodmansee for all his efforts as our Secretary/Treasurer.

AMCOP 59
REPORT OF THE RESOLUTIONS COMMITTEE
Darwin Wittrock and Kevin Baldwin

Whereas, the 59th Annual Midwestern Conference of Parasitologists met at the University of Wisconsin-Oshkosh, and

Whereas, the meeting was of the highest quality, promoting the field of parasitology as well as fellowship among those in attendance, and

Whereas, the membership of AMCOP wishes to acknowledge the contributions of the following individuals to the success of the 59th annual conference, therefore be it resolved that we acknowledge with THANKS the following:

1. Dr. Shelly Michalski, Program Officer, for her meticulous planning that made for a successful meeting,
2. Dr. Jason Curtis, Presiding Officer, for his efficiency in conducting the meeting and accurate pronunciation of all speaker and scientific names,
3. Dean John Koker of the College of Letters and Sciences at UW-Oshkosh for his welcoming remarks,
4. Shelly's significant other Fuzzy for his all his efforts in screen printing of AMCOP T-shirts, driving the shuttle bus for the Thursday evening social, and his friendly bartending Friday evening at the Alumni House,
5. Our symposium speakers, Dr. Gary Weil of Washington University School of Medicine in St. Louis, MO, for his talk on "Research for the elimination of lympathic filariasis: Egyptian endgame" and Dr. Peter Fisher, also of Washington University School of Medicine, for his presentation on "Lateral gene transfer of *Wolbachia* endobacteria to the nuclear genome of filarial parasites,"
6. The American Society of Parasitologists for providing travel funds for our speakers,
7. Dr. David Williams of Illinois State University for his enlightening banquet address on "The genomics revolution in Parasitology,"
8. All AMCOP members, especially students, who presented papers and posters making the meeting an educational experience for all,
9. The University of Wisconsin-Oshkosh for providing excellent facilities and a delicious banquet meal with wine – oops – without wine,

risk and there is a need to monitor the presence of this zoonotic parasite in North America.

18 Molecular identification of *Cryptosporidium* species infecting Wisconsin dairy calves. **Matt Brewer (UG)**, Nathan Butler (UG), Julie Anderson, and Darwin Wittrock. Department of Biology, University of Wisconsin–Eau Claire, Eau Claire, WI 54701.

Cryptosporidium is a genus of protozoan parasites that infects the gastrointestinal tract of many vertebrate hosts including wildlife, livestock, and humans. Of the three species of *Cryptosporidium* that commonly infect cattle (*C. bovis, C. parvum*, and *C. andersoni*), only *C. parvum* is zoonotic. However, these three species are indistinguishable in a microscopic examination. Our previous work demonstrated a high occurrence of *Cryptosporidium* in pre-weaned dairy calves. To assess the zoonotic potential of oocysts shed by this age group, we determined the species identity of 25 specimens isolated from Wisconsin calves. An 830 bp fragment of the 18S rRNA gene from *Cryptosporidium* was amplified using PCR and digested using SspI and MboII restriction enzymes. Restriction fragment analysis of the products identified all 25 samples as *C. parvum*. One specimen of *C. parvum* was obtained from a Jersey calf, a breed previously thought to only host *C. bovis*. Our results suggest that pre-weaned dairy calves are important reservoir hosts for zoonotic *Cryptosporidum* in Wisconsin.

19 Can oxytetracycline eliminate the chronic stage of *Anaplasma marginale* in cattle? **Suzanne Bulson (UG), Dana N. Fey (UG)** and Douglas B. Woodmansee, Department of Biology, Wilmington College, Wilmington, Ohio 45177.

Anaplasmosis, caused by the rickettsia *Anaplasma marginale*, is a serious threat to cattle in the United States. *Anaplasma marginale* can be diagnosed in cattle by using stained blood smears, polymerase chain reactions (PCR), or enzyme linked immunosorbant assays (ELISA). The cattle herd at Wilmington College, Wilmington Ohio, suffered an outbreak of anaplasmosis in the fall of 2006. Cattle were confirmed positive for *A. marginale* using stained smears and ELISA. After an emergency treatment with oxytetracycline, blood samples were drawn for PCR analysis. The cattle were then treated with a novel treatment regimen that included an oxytetracycline injection and addition of oxytetracycline to the feed. A second set of blood samples were taken after completion of the treatment regimen. All blood samples were tested for the presence of DNA sequences from the *A. marginale* MSP5 gene. Selected PCR products were digested with HINDIII to confirm

target sequence identity. The PCR results revealed that the cows were still infected with the rickettsia after treatment, supporting recent publications which suggest that oxytetracycline does not cure the chronic stage of *A. marginale*.

20 Behavioral response patterns of freshwater snails to biotic, abiotic factors and parasitism. **Trent Gray (UG)**, Jillian L. Detweiler, and Dennis J. Minchella. Department of Biological Sciences, Purdue University, West Lafayette, IN 47907.

Host movement is one factor that is undoubtedly important to host-parasite systems, as most parasites depend on their hosts for dispersal. However, the biotic and abiotic factors that affect host dispersal are uncertain. Experimental trials using both biotic and abiotic factors are required to better understand host dispersal in nature. Although snails are often predominant in freshwater communities, mechanisms explaining their dispersal patterns are infrequently studied, especially when considering the interaction of multiple factors. Our study examined the behavioral responses of two snail species (Lymnaea elodes and Helisoma trivolvis) to 3 environmental stimuli with (n=6 per species) and without species interactions (n=12 per species). In addition, the effect of a parasite (Echinostoma revolutum) on L. elodes behavior was assessed with and without species interactions. Twelve snails were placed in a Y-shaped experimental chamber with carrion, vegetation or a temperature gradient placed in one of the arms (15 replicates per stimulus). Snail movement was monitored for 1 hour. During the single species experiments, both snail species had significant positive responses to carrion. Vegetation was not a significant stimulus for L. elodes, but H. trivolvis responded positively. High temperatures were avoided by L. elodes and did not elicit a response in H. trivolvis. Species interactions affected the response of H. trivolvis to carrion and temperature suggesting that competition/interference for resources occurred between the snail species. When parasitized L. elodes were present, neither snail species responded to carrion. The parasite seems to neutralize any competition/interference that may have occurred during previous interaction trials. This work suggests these environmental stimuli would be useful predictors for snail movement in epidemiological models. Further, models should incorporate species diversity and potential species interactions to better understand host dispersal in nature. More evaluation is necessary to understand how parasites affect the response of snails to environmental stimuli.

There was spirited bidding on a wide variety of texts, reprints and other items at the silent auction. A highly successful T-shirt sale was conducted thanks to the efforts of Shelly Michalski and her husband. The shirt had a global warming/tropical disease theme.

AMCOP 60 will be held in June of 2008 at University of Illinois College of Veterinary Medicine. Additional future meeting sites as determined by the meeting sites committee are:

- AMCOP 61 – 2009: Ohio Wesleyan University, Delaware, OH
- AMCOP 62 – 2010: Western Illinois University, Macomb, IL
- AMCOP 63 – 2011: Saint Mary's College, Notre Dame, IN
- AMCOP 64 – 2012: Truman State University, Kirksville, MO

At the business meeting, Secretary-Treasurer Woodmansee presented the minutes of AMCOP 58, and treasurer's reports for 2006 and early 2007. These were approved.

After extensive discussion, the membership approved the creation of a new student travel awards program. The program will provide $150 to each award winner (Herrick, LaRue, Cable and Honorable Mention) to help defray the costs of presenting their award-winning presentation at another meeting. Award winners are to send proof of acceptance of their abstract to the other meeting to the Secretary/Treasurer who will then write a check for $150 to the award winner. At this time the program in a pilot phase and will be reevaluated at future meetings.

Committee reports were received and approved as follows: Auditing (Milton McAllister and Trudy Aebig), Symposium (Tim Yoshino and David Williams), Meeting Sites (Joe Camp and Robert Sorensen), Nominating (Shelly Michalski and Jeff Laursen), and Resolutions (Darwin Wittrock and Kevin Baldwin).

Officers elected for 2008 were: Dr. Robert Sorensen, Minnesota State University, Mankato as Presiding Officer, Dr. Milton McAllister of The University of Illinois College of Veterinary Medicine as Program Officer, and Dr. Douglas Woodmansee of Wilmington College as Secretary/Treasurer (2 year term).

Submitted July 17, 2007, Douglas B. Woodmansee

SUMMARY OF THE 59TH ANNUAL MIDWESTERN CONFERENCE OF PARASITOLOGISTS.

The 59th Annual Midwestern Conference of Parasitologists was held on June 14-16, 2007, at the University of Wisconsin Oshkosh in Oshkosh, Wisconsin. A total of 61 persons registered for the conference. Dr. Jason Curtis of Purdue University North Central was Presiding Officer, and Dr. Michelle Michalski the University of Wisconsin Oshkosh made local arrangements and served as Program Officer. Dr. John Koker, Dean of the College of Letters and Sciences provided welcoming remarks. Twenty three platform presentations and 10 posters were presented by members. The C.A. Herrick Award and $300 for outstanding poster was awarded to Christine Hsiao of the University of Iowa her poster on "The major surface protease (MSP) in the obligate intracellular amastigote form of *Leishmania chagasi*." The G.R. LaRue Award and $300 for outstanding platform presentation was awarded to Sriveny Dangoudoubiyam of Purdue University for her talk on "A PCR assay for detection of *Baylisascaris procyonis* eggs and larvae". Emily Doucette of Truman State University received the R.M. Cable undergraduate award and $100 for her oral presentation on "Assessment of the effectiveness of a model program if piperazine distribution on childhood malnutrition in rural Haiti." Honorable mention awards and $100 were given to Peter Ziniel of Illinois State University for the poster "The role of HMG-CoA synthase in *Shistosoma mansoni* and the search for possible inhibitors to this enzyme." and Nathan Peterson of the University of Wisconsin Madison for his talk on "Differential expression of beta 1,3/4 galactosyltransferases: a possible mechanism of differential glycotope expression in *Schistosoma mansoni*." Sriveny Dangoudoubiyam was chosen as the AMCOP nominee for the American Society of Parasitologists student travel grant award for 2008.

The symposium on Friday afternoon was presented by Dr. Gary Weil of Washington University School of Medicine who spoke on "Research for elimination of lymphatic filariasis: Egyptian endgame." and Dr. Peter Fischer whose presentation was "Lateral gene transfer of *Wolbachia* endobacteria to the nuclear genome of filarial parasites." The banquet speaker was Dr. David Williams of Illinois State University who spoke on "The genomics revolution in parasitology."

21 Strain resistance to *Eimeria falciformis* (Apicomplexa: Eimeriidae) in mice. **Renee E. Seager (UG)**,[1] and Thomas E. McQuistion.[1] [1]Department of Biology, Millikin University, Decatur, IL 62522.

Four strains of twelve-week old mice were inoculated with 1000 oocysts of *Eimeria falciformis* to compare host resistance to the parasite. Their resistance was monitored by oocyst production and mortality over a 13 day peroid postinoculation. The ICR outbred control group had the lowest mortality (27%) and the second lowest oocyst production. The C57BL/6 and CBA/J groups had moderately high oocyst production and high mortality (45% and 54% respectively). However, the DBA/101 group had a high mortality (54%) but the lowest oocyst production. Although oocyst production has been used as an indicator of strain resistance in a host infected with coccidian parasites, the data in this study suggests that mortality may be a better indicator of host resistance to coccidian infections. In turn, mortality and morbidity can considerably affect oocyst production, especially in highly pathogenic strains of coccidia.

22 Localization of *Leishmania chagasi* MSP in the amastigote-infected macrophage. **Chia-Hung Christine Hsiao (GS)**[1], Jian Q. Shao[2], John E. Donelson[3], and Mary E. Wilson[1,4,5,6,7]. [1]Molecular Biology Program, [2]Central Microscopy Research Facility, [3]Departments of Biochemistry, [4]Internal Medicine, [5]Microbiology, and [6]Epidemiology, University of Iowa, and the [7]VA Medical Center, Iowa City, IA.

MSP is an abundant surface-localized metalloprotease of *Leishmania* spp.. There is evidence that it facilitates intracellular survival of the amastigote stage. Recent studies have shown that the cytoplasmic molecule MARCKS-related protein (MRP) is a substrate for leishmania MSP. This occurs even though leishmania survive in endocytic pathway vesicles without apparent connection to the cytoplasm. MSP has been shown to be released from the extracellular promastigote form of the parasite. Furthermore, there is evidence that another leishmania molecule (EF-1α) is released by the intra-vacuolar parasite into macrophage cytoplasm. Therefore, the interactions between parasite and host cell may not be as compartmentalized as the literature would lead one to believe. Our data showed that upon entry into macrophages, there was a tight apposition between the parasite and parasitophorous vacuolar (PV) membranes. Immunoelectron microscopy indicated that MSP concentrates at this site of contact between parasite and PV. Some immunoreactive MSP was observed external to the parasite and within the parasitophorous vacuolar membrane after the first 24 hours of

infection. We also determined the localization and trafficking of MSP in the infected macrophage by Furthermore, cryo-immuno EM and TEM autoradiography suggested minimal immunoreactive MSP transfers to macrophage organelles other than the PV, and other radiolabeled microbial-derived molecules were detected in macrophage organelles outside of the macrophage PV during infection. Control macrophages infected with radiolabeled *Salmonella typhimurium* did not show similar localization. Pathogenic bacteria have developed elaborate secretion systems allowing transfer of bacterially encoding proteins into the host cell cytosol to facilitate bacterial survival. We hypothesized that *Leishmania* spp., similar to bacteria, may release endogenous molecules into the host macrophage. Such released molecules could influence the subsequent functions of the host cell.

23 Localization of glycotope expression in miracidia and sporocysts of *Schistosoma mansoni* using confocal immunofluorescence microscopy. **Nathan A. Peterson (GS)**, Cornelis H. Hokke, Andre M. Deelder, and Timothy P. Yoshino. Department of Pathobiological Sciences, University of Wisconsin-Madison, Madison, WI.

Heavily fucosylated carbohydrate epitopes (glycotopes) that are presented on the teguments of larval and adult schistosomes are key determinants in the modulation of the host immune response and parasite evasion in both intermediate and definitive hosts. Importantly, glycotope expression is developmentally and stage-specifically regulated. In this study, previously defined monoclonal antibodies were used in confocal immunofluorescence microscopy to investigate the developmental expression and localization of terminal glycotopes in miracidia and 2 day in vitro-cultured sporocysts of Schistosoma mansoni. Antibody specificities include the following glycotopes: GalNAcβ1-4GlcNAc (LDN), GalNAcβ1-4(Fucα1-3)GlcNAc (LDN-F), Fucα1-3GalNAcβ1-4GlcNAc (F-LDN), Fucα1-3GalNAcβ1-4(Fucα1-3)GlcNAc (F-LDN-F), GalNAcβ1-4(Fucα1-2Fucα1-3)GlcNAc (LDN-DF), Fucα1-2Fucα1-3GalNAcβ1-4(Fucα1-2Fucα1-3)GlcNAc (DF-LDN-DF), Galβ1-4(Fucα1-3)GlcNAc (Lewis X, LeX), Manα1-3(Manα1-6)Manβ1-4GlcNAcβ1-4(±Fucα1-3)GlcNAcβ1-Asn (trimannosyl N-linked core), and the Circulating Anionic Antigen repeating glycan (-6[GlcAβ1-3]GalNAcβ1-)n (CAAg). IFA results indicate that all glycotopes are expressed in the bodies of miracidia and sporocysts, while LDN, LDN-F, F-LDN, F-LDN-F, CAAg, and the trimannosyl core also occur on the parasite surface, associated with cilia/ciliary plates or the tegument. Only minor expression of LeX was detected in each larval stage. The bodily expression of most glycotopes is general, but some glycotopes are enriched in certain tissues. For

and IgM titres (44.9%). IgG ELISA was positive for only 28 of the 36 parasite positive individuals (77.8%) while 32 had high IgM titres (88.9%). There is a significant difference ($P<0.05$) between IgM and IgG titres. However, there was no significant difference ($P>0.05$) in the sensitivity of CATT and ELISA in diagnosis of HAT. Evaluation of sera also showed a significant ($P<0.01$) elevation of hepatic enzymes, Alanine aminotranferase (ALT), Aspartate aminotransferase (AST) and Alkaline phosphatase (ALP) in parasite positive participants. Elevated levels of globulin and creatinine and decreased triglyceride levels were recorded in parasite positive individuals. Levels of electrolytes, albumin, total protein, creatinine, urea and bilirubin showed no significant ($P>0.05$) changes during HAT infection. The study showed that the extract of *T. b brucei* was highly immunogenic and ELISA using this antigen was as specific as CATT in diagnosis of HAT. However, sensitivity was 94.4% for CATT, 88.9% for IgM and 77.8 % for IgG. The specificity of the serologic assays was low because many screened individuals may have antibodies without active infection. Individuals without observed parasites should nevertheless be suspected of clinical trypanosomiasis if they have a positive antibody test combined with elevations of hepatic enzymes, globulin, and creatinine and/or decreased triglyceride levels.

considered high positive. Serum from individuals clinically-affected with *Baylisascaris* larva migrans (1986 to 2008) and testing positive on the *Baylisascaris* ELISA but negative on the *Toxocara* EIA were considered as *Baylisascaris* positive serum samples. The western blot results show that the *Toxocara* positive serum samples have a reaction pattern that is different from the reactivity of *Baylisascaris* positive serum samples. A group of *B.procyonis* antigens between 30-45kDa are specifically identified only by the serum from individuals with *Baylisascaris* larva migrans. We believe that this western blot using *Baylisascaris* ES antigens, when used in conjunction with the ELISA and relevant epidemiological information, could be an efficient tool to generate seroepidemiological data on the prevalence on *B.procyonis* larva migrans.

28 The Use of Clinical Chemistry and Serology in the Improved Diagnosis of Human African Trypanosomiasis (HAT).

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Human African trypanosomiasis (HAT) is a chronic infection which remains asyptomatic for several months before any clinical manifestations may develop. After the onset of clinical manifestations, disease is fatal if untreated. Clinical diagnosis has to be supported by identification of the parasite, *Trypanosoma brucei gambiense,* in body fluids. Parasitological diagnosis, though more accurate, is less sensitive than serology because of the fluctuating character of the parasite, resulting in false negative results. Parasite fluctuation also underlies systemic dysfunction and multiple organ infection. This study combined parasite identification, serology, and clinical chemistry to look for keys of improving diagnostic results. A total of 1067 people were screened for HAT in two local government areas of Delta State Nigeria using standard trypanosome detection techniques. 36 subjects were parasite positive; 34 from cervical gland puncture and 2 by Hematocrit centrifugation technique ((HCT). Sero-diagnosis was carried out on serum from 98 consenting participants including the 36 parasite positive individuals. 73 were positive using Card Agglutination Technique for Trypanosomiasis (CATT) (74.5%), including 34 of the 36 parasite positive individuals (94.4%). ELISA was performed on the sera collected using extracts from *T.b brucei* as the antigen source. 72 of 98 individuals had high IgG titres (73.5%) and 65 were IgM positive (66.3%). 44 had both high IgG

example, (DF)-LDN-DF is primarily expressed in the cerebral ganglia, lateral sensory papillae, and lateral nerves of miracidia. The results of this study show that monofucosylated LDN, CAAg, and the trimannosyl core are exposed on the surfaces of schistosome larvae, suggesting a potential role for these glycotopes in parasite-host interactions. Conversely, the lack of surface expressed (DF)-LDN-DF may imply that difucosylated LDN epitopes (containing the Fucα1-2Fucα1-3 motif) are involved in other aspects of schistosome biology, not necessarily related to immune recognition and modulation in the snail intermediate host.

24 Functional genomic screen of early larval *Schistosoma mansoni* development using RNA interference.

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To date RNA interference (RNAi) represents the only method currently available for modulating gene-specific expression in *Schistosoma* spp., although large-scale (i.e., multigene) application of this technology to functional genomic investigations of early larval stage development has not been done. In the present study, 34 genes were selected, based on abundant expression in *in vitro* cultured *S. mansoni* miracidia and/or primary sporocysts, to determine if gene silencing or knockdown by RNAi was associated with definable phenotypic changes in larval development. Double-stranded RNAs (dsRNA) of approximately 500 bp were synthesized, and used to treat freshly-hatched and isolated miracidia at a concentration of 50 nM dsRNA in CBSS plus glucose. Controls included larvae cultured in CBSS alone or CBSS containing green fluorescent protein (GFP) dsRNA. Miracidia were allowed to transform to sporocysts in the presence of dsRNAs and further cultivated for 7 days, after which time sporocysts were photographed with a digital camera attached to a fluorescent inverted microscope and observed for various phenotypes including failure/delay in transformation, loss of movement, tegumental lysis/death and size changes. For the latter phenotype, sporocyst lengths were measured from captured images using Metamoph software and statistically analyzed using the Mann Whitney test. Of the phenotypes being evaluated, only larval size was affected by dsRNA treatment, and this was observed in 12 of 34 transcripts tested including GST26, elongation factor alpha, zinc finger 1, members of the SMAD signaling molecules family, among others. Moreover, transcript abundance for 5 of the 12 genes exhibiting the “size” phenotype showed a significant

knockdown by real-time qPCR, while 1 was upregulated by dsRNA treatment. Results demonstrate that the efficacy of dsRNA treatment is gene-dependent and may result in either up- or down-regulation of transcript levels. Data suggest that the "size" phenotype may represent a disruption of developmental signals, nutrient processing or metabolic imbalance.

25 Validation of the specificity and sensitivity of a PCR test for detection of *Plasmodium gallinaceum*. **H. Shalini Wijayathilake (GS)** and Milton M. McAllister, Department of Pathobiology, University of Illinois at Urbana-Champaign, Urbana IL 61802.

In our laboratory we maintain the 8A strain of *Plasmodium gallinaceum* (a malaria parasite of chickens) which was originally obtained from Sri Lanka in 1935. Now we need to obtain new field strains of *P. gallinaceum* in order to continue our research. Since the parasitemia of chickens in endemic countries (like Sri Lanka and Thailand) is typically very low, it is very difficult to identify chronically infected birds by microscopic detection of parasites in blood smears. Therefore, we have developed a Polymerase Chain Reaction (PCR) method to specifically detect *P. gallinaceum* . We have validated the specificity of the PCR primers by testing for cross-reaction with *P. juxtanucleare*, another malaria parasite of chickens which we recently imported from Sri Lanka. Sensitivity was determined by serial dilution of *P. gallinaceum* infected blood with the blood of an uninfected chicken. This PCR protocol is suitable to identify chickens with naturally occurring *P. gallinaceum* infections.

26 Construction and immunoscreening of *Angiostrongylus cantonensis* cDNA expression library. **Apichat Vitta (GS)**[1], Paron Dekumyoy[1], Thareerat Kalambaheti[2], Chalit Komalmisra[1], Jitra Waikagu1[1], Jiraporn Ruangsittichai[3] and Timothy P Yoshino[4]. [1]Department of Helminthology, [2]Department of Microbiology and Immunology, [3]Department of Medical Entomology, Faculty of Tropical Medicine, Mahidol University, Bangkok 10400, Thailand and [4]Department of Pathobiological Sciences, School of Veterinary Medicine, University of Wisconsin, Madison, WI 53706, USA.

A cDNA expression library from *Angiostrongylus cantonensis*, the causative agent of human angiostrongyliasis and eosinophilic meningitis or meningoencephalitis, was constructed. In order to identify the antigenic clones, immunoscreening was performed using pooled sera of patients who were diagnosed with angiostrongyliasis

based on clinical symptoms and serological test. Fourteen positive clones from the third round of screening were isolated and their gene insert partially sequenced. Based on these sequences and following BLASTX searches, 13 clones were found to contain a gene insert that encoded a protein similar to plant Late Embryo Abundant (LEA) related family member (lea-1) [*Caenorhabditis elegans*]. In addition, a second sequence (851 bp) encoded a 262 amino acid sequence with significant homology to the Smr domain-containing protein of *Brugia malayi*. Proteins encoded by these immuno-positive clones represent potential targets for specific immunodiagnosis of human angiostrongyliasis.

27 Differentiation of larva migrans caused by *Baylisascaris procyonis* and *Toxocara* spp by western blot. **Sriveny Dangoudoubiyam** (GS) and Kevin R. Kazacos. Department of Comparative Pathobiology, Purdue University, West Lafayette, IN 47906.

Baylisascaris procyonis and *Toxocara* spp are two major causes of larva migrans in humans. Larva migrans caused by *Toxocara* species is well known and is diagnosed serologically by enzyme immunoassay (EIA). Several cases of larva migrans and associated eosinophilic encephalitis caused by *Baylisascaris procyonis*, with a wide spectrum of clinical disease varying from fatal or irreparable neurological damage to even full recovery, have been reported. However, there is no routine serological test currently available to diagnose this infection in humans. An enzyme linked immunosorbent assay (ELISA) using the excretory-secretory (ES) antigens of *B.procyonis* larvae is currently under development in our laboratory. This test has shown great utility in assisting diagnosis of clinical cases of *Baylisascaris* larva migrans in children. Clinically-affected individuals showed very high reaction (measured as optical density) on this ELISA. Though the cross reactivity of this test with other parasites has not yet been determined, a one-way cross reactivity with *Toxocara* spp has been observed. Patients seropositive for *Baylisascaris* do not appear to react on *Toxocara* EIA, but patients seropositive for *Toxocara* spp react positively on the *Baylisascaris* ES antigen ELISA. As an approach to differentiate these two infections based on serology, we performed western blots wherein the *B.procyonis* ES antigen was probed with serum samples from individuals known to be specifically positive for either *Toxocara* spp or *Baylisascaris procyonis* larva migrans. A total of thirty human serum samples already tested for the presence of antibodies to *Toxocara* during the years 2003 to 2005 were used. Serum samples with *Toxocara* Enzyme Immunoassay (EIA) results of <1:32 were considered negative and those with EIA results of >1:256 were