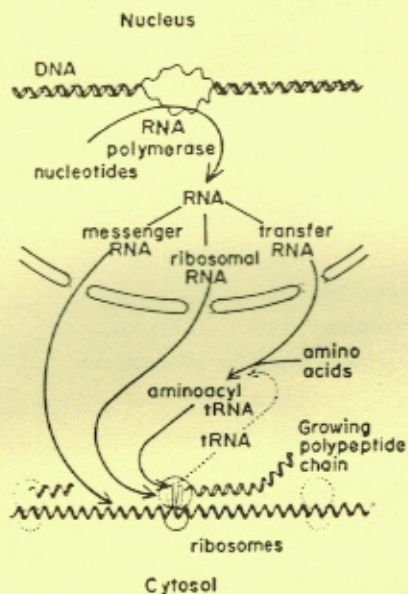


AMCOP XXXVII

ANNUAL MIDWESTERN CONFERENCE
OF PARASITOLOGISTS



UNIVERSITY OF MISSOURI

COLUMBIA, MISSOURI

JUNE 5-7, 1986

SYMPOSIUM:

GENE EXPRESSION IN HELMINTH DEVELOPMENT

AMCOP XXXVIII, 1986

Affiliate American Society of Parasitologists

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ACKNOWLEDGEMENTS

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Annual Midwestern Conference of Parasitologists (AMCOP XXXVIII)
University of Missouri, Columbia, Missouri 65211
June 5 - 7, 1986

*** PROGRAM SCHEDULE ***

June 5

- 4:00-10:00 PM Check in Mark Twain Residence Hall.
7:00-12:00 PM Social gathering Uhazy home.

June 6

- 8:00-11:00 AM Registration, coffee, Memorial Union Aud. foyer.
9:00-9:15 AM Welcoming remarks, Dr. Louis A. Sherman, Director,
Division of Biological Sciences.
9:15-11:30 AM General Session, contributed papers, Memorial
Union Auditorium.
11:30-1:00 PM Luncheon Break.
1:00-3:00 PM Symposium: Gene expression in helminth
development.

Speakers: Dr. Philip T. LoVerde, Department of Microbiology,
School of Medicine, SUNY, Buffalo
Title: Expression of developmental regulation genes in
Schistosoma mansoni.

Dr. Donald L. Riddle, Division of Biological
Sciences, University of Missouri-Columbia
Title: Gene expression in the developmental biology of
the dauer larva in *Caenorhabditis elegans*.

- 3:00-4:30 PM Poster-Demonstration Session, Tucker Hall 4.
4:30 PM Business Meeting, Tucker Hall, 111.
6:00 PM Social Hour (cash bar; beer and wine only),
Alumnae Lounge, S304, Memorial Union.
7:00 PM Banquet Buffet, Benton/Brigham Room, N214-215,
Memorial Union.

Speaker: Dr. Richard C. Tinsley, School of Biological
Sciences, University of London
Title: Correlation of parasite transmission with host
biology in the polystomatid monogenea.

June 7

- 8:00-9:00 AM Coffee and donuts, Memorial Union Aud. foyer.
- 9:00-11:00 AM General Session, contributed papers, Memorial Union Auditorium.
- 11:00 AM Business Meeting, Memorial Union Auditorium.

DEMONSTRATIONS

(* In Competition for Herrick Award)

1. *EGG SURFACE TOPOGRAPHY OF HAMMERSCHMIDTIELLA DIESINGI, LEIDYNEMA APPENDICULATUM, AND LEIDYNEMA POTENTOSAE (NEMATODA: OXYUROIDEA). XIONG YU, DEPARTMENT OF ZOOLOGY, OHIO STATE UNIVERSITY, COLUMBUS, OH 43210
2. *PATTERNS OF CERCARIAL EMERGENCE IN PROTEROMETRA: CONTRASTING RESPONSES OF CONGENERS TO LD CYCLES. M. C. LEWIS & I. G. WELSFORD, PHYSIOLOGY GROUP, UNIVERSITY OF KENTUCKY, LEXINGTON 40506
3. PARASITES OF JUVENILE ALOSIDS AS INDICATORS FOR STOCK DISCRIMINATION. R. D. KLANN AND L. S. UHAZY, DIVISION OF BIOLOGICAL SCIENCES, UNIVERSITY OF MISSOURI, COLUMBIA, MO 65211.
4. TOXICITY OF PURIFIED HUMAN EOSINOPHIL GRANULE PROTEINS FOR NEWBORN LARVAE OF TRICHINELLA SPIRALIS. K. J. HAMANN, R. L. BARKER, D. A. LOEGERING AND G. J. GLEICH, DEPARTMENT OF IMMUNOLOGY, MAYO CLINIC & FOUNDATION, ROCHESTER, MN.

PAPER PRESENTATIONS

(* In Competition for LaRue Award)

1. *THE EFFECTS OF GOSSYPOL ON THE SPERMATOGENESIS AND DEVELOPMENT OF THE EYEFLUKE, PHILOPTHALMUS GRALLI AND ITS CHICKEN HOST. ROBERT K. MAC NAB DEPT. OF BIOL. SCI., WESTERN ILLINOIS UNIVERSITY, MACOMB, IL 61455
2. *LIFE CYCLE AND DEVELOPMENT OF SARCOCYSTIS MURIS IN MICE. C. L. WILSON, DEPARTMENT OF ZOOLOGY, IOWA STATE UNIVERSITY, AMES, IA 50011
3. *ESOPHAGEAL CHANGES IN RING DOVES (STREPTOPELIA RISORIA) AFTER ORAL INFECTION WITH TRICHOMONAS GALLINAE. GLENN E. KIETZMANN, JR. DEPT. OF ZOOLOGY, IOWA STATE UNIVERSITY, AMES, IOWA, 50011.

4. *MORPHOLOGICAL VARIATION IN STRAINS AND CLONES OF HYMENOLEPIS DIMINUTA. DAVID A. LEIBY, DEPARTMENT OF ZOOLOGY, THE OHIO STATE UNIVERSITY, COLUMBUS, OHIO 43210
5. *STUDIES OF IN VITRO EXCYSTATION OF CRYPTOSPORIDIUM SP. FROM CALVES. DOUGLAS B. WOODMANSEE, DEPARTMENT OF ZOOLOGY, IOWA STATE UNIVERSITY AND THE NATIONAL ANIMAL DISEASE CENTER, AMES, IOWA.
6. *EQUILIBRIUM VS. NONEQUILIBRIUM IN PARASITE POPULATIONS: ARE PATCHINESS AND RESISTANCE THUMB'S ON NATURE'S BALANCE? J. W. MELLEN, DEPARTMENT OF BIOLOGY, TEXAS A&M UNIVERSITY, COLLEGE STATION, TEXAS. 77843
7. *IMPROVED PURIFICATION OF INFECTIVE SPOOROZOITES OF EIMERIA SPECIES. J. E. HOSEK, DEPARTMENT OF VETERINARY PATHOBIOLOGY, UNIVERSITY OF ILLINOIS, URBANA, IL. 61801
8. SEASONAL POPULATION DYNAMICS OF ALLOCREADIUM LOBATUM (TREMATODA: ALLOCREADIIDAE) IN CREEK CHUBS (SEMOTILUS ATROMACULATUS). JOSEPH W. CAMP, JR., DEPARTMENT OF BIOLOGY, PURDUE NORTH CENTRAL, WESTVILLE, IN 46391
9. PLASMA PEPSINOGEN TEST FOR HYPOBIOTIC LARVAE IN SHEEP. E. J. HUGGHINS AND R. A. JENSEN, BIOLOGY DEPT., S. D. STATE UNIV., BROOKINGS, SD 57007
10. IN VITRO EXCYSTMENT OF THE BLACK SPOT TREMATODE UMULIFER AMBLOPLITIS (TREMATODA: DIPLOSTOMATIDAE). A. D. JOHNSON AND S. J. SPELLMAN, DEPARTMENT OF BIOLOGY, UNIVERSITY OF SOUTH DAKOTA, VERMILLION, SD 57069
11. IMMUNE REGULATION OF GENE EXPRESSION IN HYMENOLEPIS DIMINUTA. AFZAL A. SIDDIQUI, STEVE R. KARCZ AND RON B. PODESTA, DEPARTMENT OF ZOOLOGY, UNIVERSITY OF WESTERN ONTARIO, LONDON, CANADA N6A 5B7.
12. DRUG EFFICACY AGAINST COCCIDIAN PARASITES IN GAME-FARM REARED PHEASANTS (PHASIANUS COLCHICUS) FROM ILLINOIS. T. E. MCQUISTION, DEPARTMENT OF BIOLOGY, MILLIKIN UNIVERSITY, DECATOR, IL 62522

13. GLYCOGEN AND GLYCEROL IN THE CRYOPROTECTION OF PURPLE MARTIN FLEAS, CERATOPHYLLUS IDIUS. DOUGLAS P. SCHELHAAS AND OMER R. LARSON, BIOLOGY DEPARTMENT, UNIVERSITY OF NORTH DAKOTA, GRAND FORKS, ND 58202
14. PREVALENCE AND INTENSITY OF TRICHINELLA SPIRALIS INFECTION IN ILLINOIS WILDLIFE. DANIEL E. SNYDER AND KENNETH S. TODD, JR. DEPARTMENT OF VETERINARY PATHOBIOLOGY, UNIVERSITY OF ILLINOIS, 2001 S. LINCOLN AVE., URBANA, IL 61801

Demonstrations

- 1 EGG SURFACE TOPOGRAPHY OF HAMMERSCHMIDTIELLA DIESINGI, LEIDYNEMA APPENDICULATUM, AND LEIDYNEMA POTENTOSAE (NEMATODA: OXYUROIDEA). XIANG YU, DEPARTMENT OF ZOOLOGY, OHIO STATE UNIVERSITY, COLUMBUS, OH 43210.

The eggs of *L. potentosae* and *L. appendiculatum* have the same shapes and locations for opercular grooves. The opercular grooves are oblique, incomplete and terminal. The opercular groove of *L. potentosae* is partially formed at the beginning of embryonic development. The opercular groove deepens and two sharp edges form as development proceeds. The opercular groove of the egg of *L. appendiculatum* has a suture in the midline. Two narrow but slightly salient zones surround the suture. The suture becomes deeper with embryonic development. The morphology of the opercular groove of *H. diesingi* is very similar to that of *L. appendiculatum* except its opercular groove is completely circular and less tilted to the axis of the egg. There are numerous pores and concave pits distributed on the whole egg shell of these three species. Their shapes and sizes are very similar in *L. appendiculatum* and *H. diesingi* except the pores are more numerous in *H. diesingi* than *L. appendiculatum*. In *L. potentosae*, the concave pits are smaller and less numerous. Compared to *L. appendiculatum* and *H. diesingi*, the egg surface of *L. potentosae* is rougher and sand-like in appearance.

- 2 PATTERNS OF CERCARIAL EMERGENCE IN *Proterometra*: CONTRASTING RESPONSES OF CONGENERS TO L/D CYCLES. M.C. LEWIS & I.C. WELSPORD, PHYSIOLOGY GROUP, UNIVERSITY OF KENTUCKY, LEXINGTON 40506.

Proterometra macrostoma and *P. edneyi* (Azygiidae) require the same snail host, *Goniobasis semicarinata*, but different fish hosts in their life cycles. Cercariae emerging from snails must be ingested by a sun-fish (*P. macrostoma*) or darter (*P. edneyi*) to complete development. When infected snails were exposed to artificial L/D cycles at constant temperature (20C), *P. edneyi* emerged during the light (84%:102/120), but *P. macrostoma* emerged during the dark (72%:84/117). When the L/D regime was shifted relative to natural L/D cycle, peak emergence of both species shifted with the new regime. After 72 h in constant light or dark, emergence was no longer rhythmic in either species. Thus, L/D cycling appears to be important in timing the emergence of both species. These data suggest underlying circadian rhythms which would allow peak emergence of these cercariae to coincide with the feeding periods of their respective fish hosts

- 3 PARASITES OF JUVENILE ALOSIDS AS INDICATORS FOR STOCK DISCRIMINATION. R. D. KLANN AND L. S. UHAZY, DIVISION OF BIOLOGICAL SCIENCES, UNIVERSITY OF MISSOURI, COLUMBIA, MO 65211.

One hundred and fifty-six juvenile alosids (sixty-one *Alosa sapidissima*, forty-seven *Alosa pseudoharengus* and forty-eight *Alosa aestivialis*) were necropsied for parasitological examination. Twenty metazoan parasites from the following taxa were recovered: one Monogenea, four Digenea, two Cestoda, seven Nematoda, one Nematomorpha, one Acanthocephala and four Copepoda. The fish were arbitrarily divided into three geographical groups based on location of catch in coastal Atlantic waters. Three measures: the Shannon-Weaver index of diversity, the Equitability index and Simpson's index were used to compare the parasite assemblages of these groups. Analysis of the data demonstrates that distinct differences exist between the parasite assemblages and suggests the feasibility of using these assemblages as indicators for stock discrimination.

- 4 TOXICITY OF PURIFIED HUMAN EOSINOPHIL GRANULE PROTEINS FOR NEWBORN LARVAE OF TRICHINELLA SPIRALIS. K.J. HAMANN, R.L. BARKER, B.A. LOEGERING AND G.J. GLEICH, DEPARTMENT OF IMMUNOLOGY, MAYO CLINIC & FOUNDATION, ROCHESTER, MN.

Eosinophils have been implicated in both in vivo and in vitro destruction of helminths. One approach in elucidating the role of the eosinophil in parasite killing has been to test the toxicity of purified granule proteins for parasites in vitro. Previously, major basic protein (MBP) and eosinophil cationic protein (ECP) were shown to be toxic for schistosomes of *Schistosoma mansoni* while eosinophil-derived neurotoxin (EDN) was only marginally so. We tested the toxicity of MBP, ECP and EDN over a range of concentrations (0.006-5.0x10⁻⁴M) for *T. spiralis* newborn larvae. Our observations confirm previous reports of toxicity of mildly reduced and alkylated (R&A) MBP. At concentrations of 5x10⁻⁵M and above R&A MBP killed 75% or more of the larvae within the first hour of culture. ECP was an effective toxin for these larvae after 3 hrs of culture and by 12 hrs, dose-related toxicity was evident. After 24 hrs 100% of the larvae were killed in 5x10⁻⁵M ECP. EDN was much less toxic and after 12 hrs 90% of the larvae were still living even at concentrations of 1x10⁻⁴M. At this concentration and above, increased mortality was seen after 24 hrs, but only slight toxicity was demonstrated at 5x10⁻⁵M and below. RNase, a molecule of considerable homogeneity with ECP and EDN, failed to exhibit any toxicity. Preliminary studies show similar relative toxicities for microfilariae of *Brugia pahangi* although in vitro effects appear to be somewhat delayed against these parasites. Both MBP and ECP, therefore, appear to be potent helminthotoxins while EDN is much less so, being only partially effective even at relatively high concentrations.

Paper Presentations

- 1 THE EFFECTS OF GOSSYPOL ON THE SPERMATOGENESIS AND DEVELOPMENT OF THE EYEFLUKE, PHILOPHthalmus gralli AND ITS CHICKEN HOST. ROBERT K. MAC NAB DEPT. OF BIOL. SCI., WESTERN ILLINOIS UNIVERSITY, MACOMB, IL 61455.

Gossypol, a male antifertility compound, was administered orally in the form of Gossypol Acetic Acid (GAA) to infected chickens. Its effect on worm development was examined using 3 groups fed different rations; controls on untreated feed, feed with 0.04% GAA, and feed with 0.04% GAA + FeSO₄. Worms removed and measured every 5 days for 35 days showed increased growth rates in the GAA group. No morphological differences in the development of the reproductive systems of the adults were observed in the 3 groups. GAA proved toxic to the chicken hosts as reflected in smaller growth rates. This was partially overcome by the addition of FeSO₄. In a second experiment older infected chickens were fed GAA either in feed (0.04%) or by capsule (80 mg/kg/day). These GAA-treated chickens showed lower weight gain and even loss in the case of the capsule-fed hosts. Also purple-colored wattles and combs, pale leg coloring, and loss of breast muscle tissue were noticed. GAA-treated chickens had underdeveloped testes and never showed evidence of spermatogenesis when compared to untreated control chickens. Worms from treated hosts showed normal timing for spermatogenesis as determined by autoradiography. However, many anomalies such as fused testes, 3 testes, 1 testes, no testes, ovarian tissue in testes, clumped (encapsulated) sperm, degenerating sperm, and degenerating testes were observed in these adults.

- 2 LIFE CYCLE AND DEVELOPMENT OF SARCOCYSTIS MURIS IN MICE. C. L. WILSON, DEPARTMENT OF ZOOLOGY, IOWA STATE UNIVERSITY, AMES, IA 50011.

Sarcocystis muris zoites were found in the blood before 10 days post infection (dpi) and after 16 dpi. There was inflammation in the liver starting on 4 dpi. Schizonts were found in the liver 12 and 14 dpi. The greatest inflammation and necrosis was on 16 and 18 dpi. The inflammation quickly subsided to very low levels soon afterwards. Sarcocyst development had not begun by the end of the experiment at 28 dpi, however, there was inflammation in the muscles starting on 18 dpi. There was splenomegaly and mild anemia associated with the infection.

- 3 ESOPHAGEAL CHANGES IN RING DOVES (STREPTOPELLA RISORIA) AFTER ORAL INFECTION WITH TRICHOMONAS GALLINAE. GLENN E. KIETZMANN, JR. DEPT. OF ZOOLOGY, IOWA STATE UNIVERSITY, AMES, IOWA, 50011

A total of 13 ring doves (Streptopelia risoria) were orally intubated with a highly virulent strain of Trichomonas gallinae (Rivolta) so that caseous nodule formation could be followed histologically. Between inoculation and four days post-inoculation, tissue changes were restricted to minor inflammation and epithelial vacuolation. Caseous nodules appeared on day five and were present throughout the remainder of the study. As nodule growth progressed, there was increased epithelial vacuolation which was accompanied by massive leucocytic infiltration of the underlying connective tissue. Examination of the nodules proper revealed their composition to be primarily heterophils, cellular debris and possibly the parasites themselves.

- 4 MORPHOLOGICAL VARIATION IN STRAINS AND CLONES OF HYMENOLEPIS DIMINUTA. DAVID A. LEIBY, DEPARTMENT OF ZOOLOGY, THE OHIO STATE UNIVERSITY, COLUMBUS, OHIO 43210

Four strains and two clonal populations of Hymenolepis diminuta were examined for morphological variation. The lengths and widths of eggs and larvae passed in the hosts' feces and the numbers and distributions of testes within proglottids were determined. Analyses of the data demonstrated significant differences in the lengths and widths of eggs and larvae among the strains and clones, but a discriminant analysis of the data indicated these parameters to be of questionable taxonomic significance. Considering all possible numbers and distributions of testes, 17 variations were seen in the strobilae of tapeworms. Analyses of data from 359 tapeworms demonstrated that the strains and clones of H. diminuta could be differentiated and that one strain was significantly less variable than the others. Transplantation experiments in which holdfasts were allowed to regenerate successive strobilae demonstrated that the numbers of distributions of testes within the proglottids of successive strobilae from an individual holdfast were independent (different).

- 5 STUDIES OF IN VITRO EXCYSTATION OF CRYPTOSPORIDIUM SP. FROM CALVES.

DOUGLAS B. WOODMANSEE, DEPARTMENT OF ZOOLOGY, IOWA STATE UNIVERSITY AND THE NATIONAL ANIMAL DISEASE CENTER, AMES, IOWA.

Studies of in vitro excystation of Cryptosporidium sp. from calves showed that optimum excystation occurred when oocysts were treated with bleach, then excysted at 37°C for 60 min in the presence of taurocholic acid solutions at pH about 7.0. Trypsin was not required for excystation and high concentrations were inhibitory. Studies using protease inhibitors and direct assays of proteolysis failed to implicate proteolytic enzymes as effectors of excystation. The results suggest that Cryptosporidium and perhaps other suture-bearing coccidians have excystation mechanisms which are fundamentally different from those used by Eimeria.

6. EQUILIBRIUM VS. NONEQUILIBRIUM IN PARASITE POPULATIONS: ARE PATCHINESS AND RESISTANCE THUMB'S ON NATURE'S BALANCE?
J.W. MELLEN, DEPARTMENT OF BIOLOGY, TEXAS A&M UNIVERSITY,
COLLEGE STATION, TEXAS. 77843

Opposing theories exist concerning the regulatory status of host-parasite population systems. On one side are theories considering parasite populations nonequilibrium systems, on the other side are theories assuming parasites regulate both their own populations and those of their hosts. Because spatial patchiness in resources and temporal changes in host resistance have been posed as factors leading to nonequilibria, a mathematical model of a host-parasite system capable of stable behavior was modified to incorporate these factors. Simulations using this model suggest that spatial heterogeneity of host density can influence equilibrium levels of both host and parasite populations. This is contrary to results of other recent models which suggest that subpopulation equilibria are independent of alternate host populations, but is consistent with empirical evidence. Furthermore, the presence of acquired resistance in small, dense populations can change the model behavior qualitatively--toward a nonequilibrium system. It is proposed therefore that equilibrium and nonequilibrium arguments may be reconciled in terms of specific conditions present in a given host-parasite system.

- 7 IMPROVED PURIFICATION OF INFECTIVE SPOOROZOITES OF EIMERIA SPECIES.
J. E. HOSEK, DEPARTMENT OF VETERINARY PATHOBIOLOGY, UNIVERSITY OF ILLINOIS, URBANA, IL. 61801.
Biochemical studies on *Eimeria* spp. require purification procedures that yield large amounts of pure, representative, and infective sporozoites. However, most published procedures report yields of purified sporozoites relative to the number of excysted sporozoites rather than the starting number of sporulated oocysts. By optimizing *in vitro* excystation conditions and anion exchange chromatography of excysted sporozoites I have developed a procedure for the large scale purification of *Eimeria* spp. sporozoites, which routinely yields 4-4.5 sporozoites per sporulated oocyst (50-56% yield). The procedure takes 3-5 hrs., uses no specialized equipment and results in the isolation of 98% pure, infective sporozoites from *Eimeria vermiformis* (EV) and *Eimeria steidae* (ES). This "high-yield" procedure insures the isolation of a representative population of sporozoites that are suitable for biochemical studies. Initial studies have demonstrated high levels of acid phosphatase (ACP) activity associated with EV and ES sporozoites. The specific activity of ACP obtained in EV sporozoites is comparable to that reported for highly virulent *Leishmania donovani* in which ACP is reported to inhibit the production of toxic superoxide anion by intact neutrophils. Interestingly, ES sporozoites display a 3 fold higher specific activity for this enzyme. Preliminary experiments suggest the ACP of EV sporozoites is easily solubilized (70%) by sonication. Current efforts are focused on purification and characterization of these ACPs and examination of their role in pathogenesis.

- 8 Seasonal Population Dynamics of *Allocreadium lobatum* (Trematoda: Allocreadiidae) in Creek Chubs (*Semotilus atromaculatus*).
Joseph W. Camp, Jr., Department of Biology, Purdue North Central, Westville, IN 46391.

Creek chubs collected from Sugar Creek in Normal, Illinois were examined for the digenetic trematode, *Allocreadium lobatum*. Monthly relative abundances for male chubs alone and female chubs alone both varied significantly. The relative abundances for combined sex data also varied significantly. Female chubs had a significantly higher overall relative abundance of infection than did male chubs. The relative abundance increased with the size class of the fish, but the increase was not statistically significant. Variance to mean ratios were greater than one, suggesting that the parasites exhibited an overdispersed (contagious) distribution within the chub hosts. The frequency distribution of parasites within the chubs was not significantly different from the negative binomial model.

- 9 PLASMA PEPSINOGEN TEST FOR HYPOBIOTIC LARVAE IN SHEEP. E.J. HUGHINS AND R.A. JENSEN, BIOLOGY DEPT., S.D. STATE UNIV., BROOKINGS, SD 57007

A pasture flock of 48 sheep was found to be heavily parasitized by the twisted stomach worm, *Haemonchus contortus*, which is particularly injurious because when the infective 3rd stage larvae (L₃) are ingested with herbage, they burrow into abomasal glands and become 4th stage (L₄) larvae, causing impairment in gland function. During the winter the L₄ larvae become dormant or hypobiotic and then emerge during the spring.

Half of the sheep were treated with Ivomec, and 4 ewes (2 treated and 2 controls) were selected for the plasma pepsinogen test to determine the presence of hypobiotic larvae during the winter. The critical portion of this test is the measurement of tyrosine in the blood. At least 1500 millimicrons of tyrosine is indicative of hypobiotic L₄ larvae; we observed levels as high as 1900 millimicrons in control ewes. The ewes had very low *Haemonchus* egg counts during the winter, which was to be expected since larvae do not produce eggs. But by May 1, large numbers of trichostrongylid eggs appeared in fecal samples of the untreated ewes, illustrating the phenomenon of "spring rise," when overwintering larvae emerge from abomasal glands and become egg-laying adults. This allows re-seeding of the pasture with nematode eggs. Thus we demonstrated that the plasma pepsinogen test, although difficult to perform, can be used as an indicator of hibernating trichostrongylid larvae which are a potential source for parasitizing the entire flock of sheep in the spring.

Supported by S.D. Agricultural Experiment Station, Project H-074.

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IN VITRO EXCYSTMENT OF THE BLACK SPOT TREMATODE UVULIFER AMBLOPLITIS (TREMATODA: DIPLOSTOMATIDAE). A.D. JOHNSON AND S.J. SPELLMAN, DEPARTMENT OF BIOLOGY, UNIVERSITY OF SOUTH DAKOTA, VERMILLION, SD 57069
 Metacercariae of U. ambloplitis became activated and excysted in both acid pepsin and acidified Locke's balanced salt solution (BSS). The maximum percentage of excystment was 40% in acid pepsin and 4% in Locke's BSS. Acid pretreatment was required for the additional excystment that occurred in the pretreatment reductant sodium dithionite, or in an incubation medium, or in a sodium dithionite-incubation medium sequence. Since larvae excysted during both pretreatments and in incubation media, maximum overall excystment percentages were obtained with three treatments; (1) 0.5% pepsin at pH 2.0 for 30 min, (2) 0.2% sodium dithionite at pH 7.4 for 10 min, and (3) an incubation medium of 0.2% or 0.5% ox bile salts at pH 7.4 for 120 min; 66 and 79%, respectively. Excystment occurred in trypsin alone or trypsin containing incubation media following pepsin pretreatment or a pepsin-sodium dithionite sequence, but the larvae were sluggish and died within a few min after excysting. Thus, a synergistic effect between bile salts and trypsin was not found in this study.

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IMMUNE REGULATION OF GENE EXPRESSION IN HYMENOLEPIS DIMINUTA. AFFZAL A. SIDDIQUI, STEVE R. KARZ AND ROM B. PODESTA, DEPARTMENT OF ZOOLOGY, UNIVERSITY OF WESTERN ONTARIO, LONDON, CANADA N6A 5B7.

The longevity of Hymenolepis diminuta in rats is only limited by the life of the host. This worm is rejected by mice after 6-7 days due to host's immune response. Administration of cortisone delays the rejection in mouse host. The objective of this study was to discover what level of gene expression in H. diminuta was altered in mice accompanying immune rejection. To study gene expression, worms were metabolically labelled *in vitro* with ³⁵S-methionine and to explore regulation of gene expression, RNAs were isolated and translated *in vitro*. Gene products were analysed by 2-D PAGE. It was observed that worms from mice contain all of the messages required for normal gene expression (ascertained by studying the rat worms of the same age) but they are not translated *in vitro* because of the effect of host's immune response at the post-transcriptional level. (This study was supported by an NSERC research grant to RBP).

12

DRUG EFFICACY AGAINST COCCIDIAN PARASITES IN GAME-FARM REARED PHEASANTS (PHASIANUS COLCHICUS) FROM ILLINOIS. T. E. MCQUISTION, DEPARTMENT OF BIOLOGY, MILLIKIN UNIVERSITY, DECATUR, IL. 62522

Litter samples were obtained from an Illinois ring-necked pheasant propagation farm to determine (1) the species of coccidian parasites present in the birds and (2) the coccidiocidal or coccidiostatic action of sulfaquinoxaline, amprolium and furazolidone against these parasites. Four coccidian species were found: Eimeria duodenalis represented 57% of the oocysts recovered, E. tetartooimia represented 24.9% while E. phasiani and E. pacifica showed about equal numbers of oocysts totalling 17.6%.

All three drugs were effective in reducing oocyst production compared to non-medicated controls. Furazolidone showed no coccidiostatic effect against any of the coccidian species and its coccidiocidal action was not sufficient to prevent mortality (42.8% vs. 71.4% for non-medicated group). Amprolium prevented mortality but was relatively ineffective against E. tetartooimia and E. duodenalis and was partially coccidiostatic against E. phasiani and E. pacifica. Sulfaquinoxaline was the most effective drug in controlling the coccidian parasites. It had complete coccidiostatic activity against all four coccidian species and a slightly stronger coccidiocidal action against E. duodenalis and E. tetartooimia than E. phasiani and E. pacifica.

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GLYCOGEN AND GLYCEROL IN THE CRYOPROTECTION OF PURPLE MARTIN FLEAS, CERATOPHYLLUS IDIUS. DOUGLAS P. SCHELHAAS AND OMER R. LARSON, BIOLOGY DEPARTMENT, UNIVERSITY OF NORTH DAKOTA, GRAND FORKS, ND 58202

Ceratophyllus idius is an ectoparasite of purple martins (Progne subis), and commonly inhabits the nest material of these birds. In North Dakota, martins migrate in late August and return in mid- or late April, thus separating the fleas from their hosts for 7½-8 months. Despite the host's absence and long, harsh winters, a portion of the adult flea population survives to reinfest returning birds. This study was designed to ascertain the importance of glycogen as an antifreeze and glycerol's role as a precursor. Fleas were collected about September 1, 1984, 1985 and assayed for glycogen and glycerol at the beginning of the experiment (time zero, 22 C) and at 10 and 1 C during a controlled 32 day cool-down. After cooling, half the fleas were held in ambient roof-top conditions and the rest at -6 C. Monthly assays were made mid-October through mid-April on surviving fleas from both groups. From time zero to 10 C, glycerol levels increased 3.6X. In freezer-held fleas, the glycerol levels continued to rise until stabilizing at about 25X the time zero value, while glycogen levels decreased to 6% of the original value. By mid-December, ambient-held fleas attained similar levels. The effects of warming temperatures were observed in ambient-held fleas in mid-October and mid-April. In both cases, glycerol levels decreased. This indicates that the mechanism controlling glycerol levels is temperature dependent and reversible. The high levels of glycerol (and the low, stable levels of sorbitol and trehalose) indicate that it is a primary antifreeze for C. idius and that glycogen is the source.

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- 14 PREVALENCE AND INTENSITY OF TRICHINELLA SPIRALIS INFECTION IN ILLINOIS WILDLIFE. DANIEL E. SNYDER AND KENNETH S. TODD, JR. DEPARTMENT OF VETERINARY PATHOBIOLOGY, UNIVERSITY OF ILLINOIS, 2001 S. LINCOLN AVE., URBANA, IL 61801.

Tongues from 380 raccoon, 20 coyote, and 20 red fox from Illinois were examined with the aid of peptic digestion to determine the prevalence and intensity of Trichinella spiralis. The overall prevalence for all three furbearers was 1.9%. The prevalence of infection was highest in the coyote (10%), followed by red fox (5%) and raccoon (1.3%). The mean intensity, expressed as larvae per gram (LPG) of digested tongue (\pm SE), was highest in raccoon (74 \pm 32), followed by red fox (33) and coyote (29 \pm 20). The range in intensity was 9-191 LPG. Trichinella spiralis has not been previously reported from these three hosts in Illinois and thus represent new geographic host records.

- 15 DEVELOPMENT OF ACQUIRED IMMUNITY TO CRYPTOSPORIDIUM BY CHICKENS. W. L. CURRENT, LILLY RESEARCH LABORATORIES, P. O. BOX 708, GREENFIELD, IN 46140

Small coccidian parasites of the genus Cryptosporidium are now recognized as important enteropathogens of some species of livestock and poultry, and of man. Oocysts of Cryptosporidium sp. were isolated from the gut epithelium of commercial broiler chickens with a history of intestinal and respiratory cryptosporidiosis. Following laboratory propagation, oocysts were inoculated orally into coccidia-free chickens and the developmental stages in the gut epithelium were studied by light microscopy. Morphologically distinct stages observed in mucosal smears of the large intestine, cloaca, and bursa of Fabricius were: sporozoites (2-6 hr); type I meronts and merozoites (12 hr-18 days); type II meronts and merozoites (48 hr-18 days); type III meronts and merozoites (72 hr-18 days); microgamonts and macrogametes (96 hr-18 days) and oocysts (96 hr-18 days). A similar sequence of development occurs in the respiratory epithelium of chickens inoculated intratracheally with oocysts or sporozoites and in the chorioallantoic membrane of chicken embryos following inoculation of sporozoites into the allantoic fluid. Six-week-old chickens cleared heavy bursal infections 14-16 days following oral inoculation of oocysts and were resistant to subsequent oral and respiratory challenge with oocysts. Development of acquired immunity was accompanied by the production of serum antibodies that recognized more than 20 electrophoretically distinct oocysts/sporozoite antigens of Cryptosporidium sp.

(II.) B. Annual Midwestern Conference of Parasitologists

(AMCOP) (G. Garoian, Secretary/Treasurer)

The 37th AMCOP conference was held on the campus of Ohio State University in Columbus, 20-22 June, 1985 with seventy-six persons registered for the conference and an organization membership of 161. Dr. Bill T. Ridgeway of Eastern Illinois University was Presiding Officer of the meeting and Dr. Peter W. Pappas of Ohio State University was Program Officer and made local arrangements. Five demonstrations and 27 papers were presented by members. The C. A. Herrick Award (and \$200) for the best demonstration by a graduate student was awarded to Rebecca Lee Lavy from the Department of Biology, University of Akron, Akron, Ohio (Dr. Edwin C. Rowland, major professor) for "Histopathologic study of cardiac tissue in experimental Chagas' disease". The G. R. LaRue Award (and \$200) for the outstanding paper presentation by a graduate student was awarded to Keith F. Forton from the Department of Veterinary Science, University of Wisconsin, Madison (Dr. Bruce M. Christiansen, major professor) for "Ultrastructural and electrostatic changes on Brugia pahangi microfilariae after Aedes aegypti midgut penetration".

A symposium entitled "Physiological Ecology of Parasites" was presented with Dr. Gary Uglem of the University of Kentucky Department of Biological Sciences speaking on the evolution of tegumentary sugar transport in digenetic trematodes and Dr. Carmen Fioravanti of the Department of Biological Sciences, Bowling Green State University, Bowling Green, Ohio discussing the energetics of intestinal helminths in their adaptation to an environment of low oxygen tension. The banquet speaker was Dr. K. Darwin Murrell of the Animal Parasitology Institute, USDA, Beltsville, MD who gave an interesting presentation about Trichinella entitled "Epidemiology of swine trichinosis: could both Zenker and Leuckart be correct?"

Officers elected for 1985-86 were: Presiding Officer, Dr. George Cain, Department of Biology, University of Iowa, Iowa City, IA 52242, (319)353-5807; Program Officer, Dr. Leslie S. Uhazy, Division of Biological Sciences, University of Missouri, Columbia, MO 65211, (314)882-2816; and Secretary/Treasurer, Dr. Donald M. Miller, Department of Physiology, School of Medicine, Southern Illinois University, Carbondale, IL 62901 (618)536-5513. Dr. Miller also will serve as Representative to the ASP 1985 Council meeting at the University of Georgia, Athens, GA. AMCOP-38 will be held at the University of Missouri-Columbia in early June, 1986.

George Garoian
Secretary/Treasurer

AMCOP-37 RECAP

AMCOP-37 TREASURERS REPORT FOR 1985-85

BALANCE ON HAND 8 JUNE 1984		900.20
INCOME		
MEMBERSHIP DUES:		
1984 Mbrshps		\$9.00
1985 Students		\$70.00
1985 Mbrshjps		\$336.00
INTEREST:		
CDT UNION		\$60.51
BECKMANN INST		\$200.00
ELSEVIER PRESS		\$50.00
UNIV. BANK		\$15.33
LA RUE DONATIONS:		\$210.00
CD INTRST		*78.82
MISCELLANEOUS:		\$2
SUBTOTAL:		952.84
EXPENSES		
Programs		112.00
Postage		263.00
Envelopes		9.71
Herrick Award	1985	3.00
Miscellaneous	0	21.70
SUBTOTAL:		409.81
BALANCE ON HAND 8 JUNE 1986:		543.83
ASSETS CD-UNIV BK,		886.00
CDT UNION SHARES:		25.00
NEW VALUE	886.00	
TOT. NET WORTH: 18JUN85		1,454.83

RECORDS AUDITED BY DONAL G. MYER, 22 JUNE 1985

THE ANNUAL MIDWESTERN CONFERENCE OF PARASITOLOGISTS

(AMCOP)

Objectives and Organization

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

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 ballot.

Bylaws

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

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 begin at the conclusion of the Conference in which the person was elected. The term of office of each 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-Presiding Officer 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: (1) Nominating Committee, (2) Committee to Recommend Future Meeting Places, (3) Committee to Suggest Program Possibilities for Future Meetings, (4) Resolutions Committee, (5) Judging Committee, (6) Audit Committee and 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.

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 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 members 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.

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GENERAL INFORMATION

REGISTRATION: Registration will be handled by the University of Missouri-Columbia Conference Office. Checks should be made payable to the University of Missouri. Please return one registration form per person and fees by May 30, 1986. To pre-register, complete the enclosed form and mail with your check. You may also charge the fee to your MasterCard or Visa. Complete the appropriate section on the registration form.

LOCATION: Most sessions will be held in the Memorial Union on the UMC Campus. A detailed campus map will be sent to you upon receipt of your registration.

MOTELS: A block of rooms is being held until May 15, 1986 at the Broadway Inn, 1111 E. Broadway (telephone: 314/449-2401). Prices are \$42/single and \$46/double. Please mention the Annual Mid-western Conference of Parasitologists when making your reservation to receive the above rate. This motel is three blocks North of Memorial Union on the edge of campus. An additional list of hotels/motels in Columbia, with accompanying map, will be sent to you upon receipt of your registration.

LOW-COST HOUSING: A limited number of rooms are available at the Mark Twain Residence Hall, located at 515 South 5th Street, adjacent to the UMC Campus. Lodging will be two to a room, no exception. The cost will be \$19.00 for the night of June 5, this includes breakfast on June 6. For the night of June 6, the cost will be \$17.00, since breakfast will not be served on June 7. Be sure to check the appropriate section on the registration form to reserve rooms at the Mark Twain. Fees must be included in your payment.

PARKING: There is limited visitor parking on the UMC Campus. Visitor parking is noted on the map returned with your receipt of registration. We would suggest walking or car pooling if at all feasible. Visitor's are required to deposit coins in metered parking.

TRAVEL: Columbia has connecting flights to St. Louis and Kansas City via Ozark, TWA Express, Air Midwest and Britt commuter airlines.

Bus connections are available through Greyhound Bus Lines from both KCI and Lambert Airport.

Please consult your local travel agent for current schedules.

Mid-size car rentals for University personnel will range from \$30 - \$50 per day and gas, depending on whether one-way or round trip.

REGISTRATION FORM AND ROOM REQUEST

ANNUAL MIDWESTERN CONFERENCE OF PARASITOLOGISTS
(AMCOP XXXVIII)
UNIVERSITY OF MISSOURI-COLUMBIA
COLUMBIA, MISSOURI 65211
JUNE 6-7, 1986

This registration form and room request must be received no later than May 30, 1986 to guarantee your reservation.

NAME: _____

ADDRESS: _____

Business Phone () _____ Home Phone () _____

Dorm Rooms for June 5 () and/or June 6 () (check one or both)

Thursday, June 5 includes breakfast on June 6 - \$19.00....\$ _____

Friday, June 6 - \$17.00....\$ _____

Sex: Male ___ Female ___ Smoker ___ Non-smoker ___

Name of roommate if you have a preference: _____

Banquet ticket(s) for June 6, 1986:
No. ___ at \$13.00 each\$ _____

Registration fee:
Student Member (\$4.00).....\$ _____
Professional Member (\$10.00).....\$ _____
Membership Fee (\$3.00, if you haven't paid).....\$ _____

TOTAL AMOUNT ENCLOSED \$ _____

Please charge my: MasterCard ___ Visa ___

Account Number: _____

Expiration Date: _____

Signature: _____

COMPLETE ONE FORM FOR EACH INDIVIDUAL ATTENDING AMCOP XXXVIII.

Make checks or money orders payable to: UNIVERSITY OF MISSOURI.
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Annual Midwestern Conference of Parasitologists (AMCOP XXVIII)
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June 5 - 7, 1986

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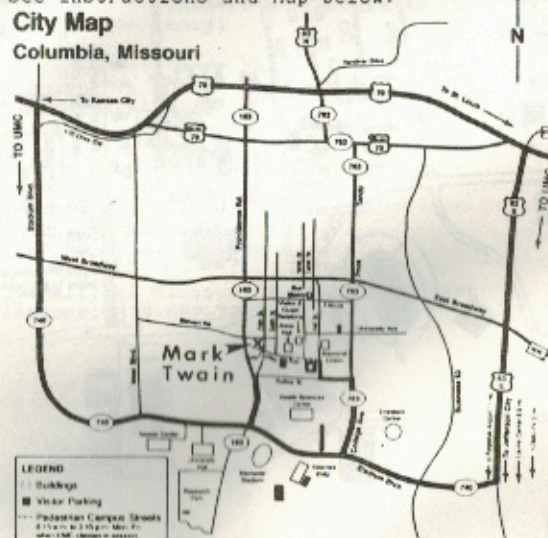
For your convenience maps of the City of Columbia and the Campus of the University of Missouri have been included with these Instructions and forwarded with your Registration Receipt. BRING THESE MAPS WITH YOU TO THE MEETING.

Air Travel

Columbia has connecting flights from St. Louis and Kansas City via Ozark, TWA Express, Air Midwest and Britt commuter airlines. Taxi (limousine) service to Columbia and car rental are available at the Columbia Regional Airport. Bus connections are available through Greyhound Bus Lines from both Lambert Airport and KCI.

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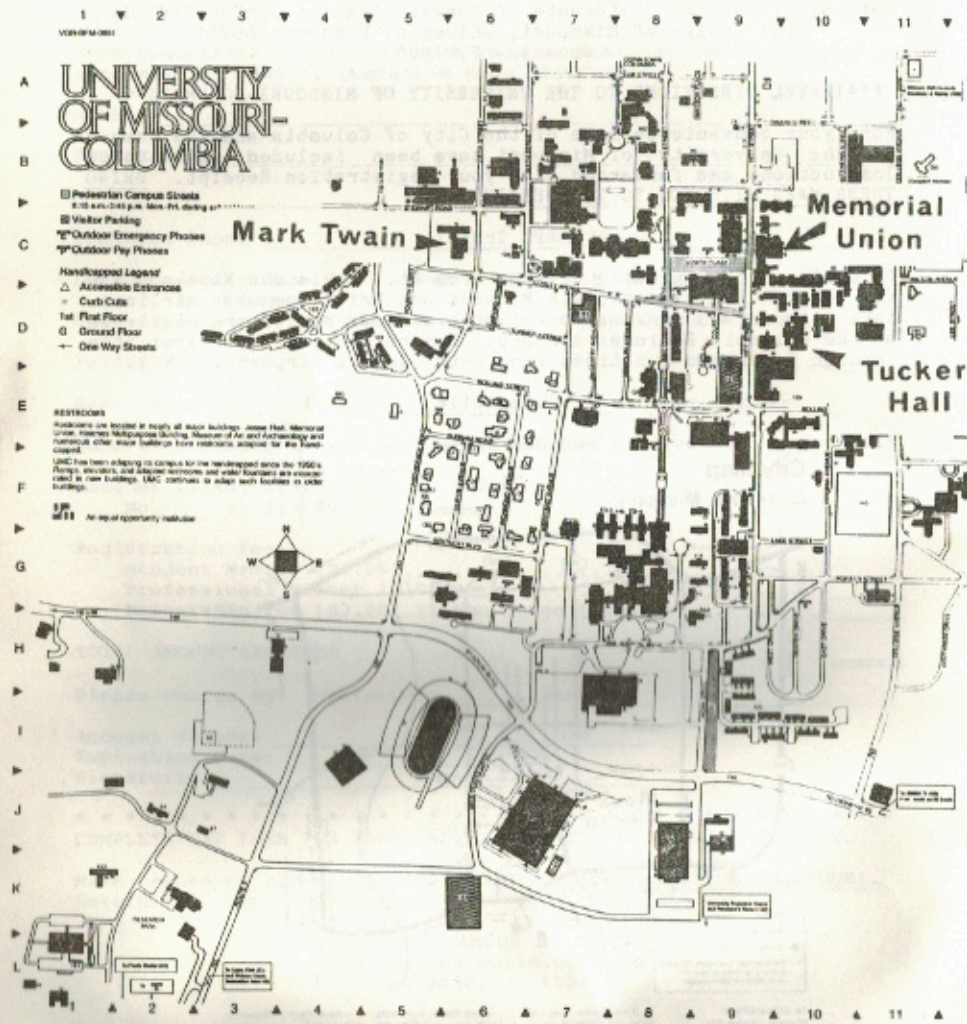
To University of Missouri-Columbia

---from West: I-70 east to Stadium Blvd., south (right) on Stadium Blvd. to College(703), north(right) on College(703) to Rollins St., west(left) on Rollins to H&I, north(right) on H&I to Visitor Parking Lot (-)

---from South: Hwy 635 north to Stadium Blvd., west(left) on Stadium Blvd. to College(703), north(right) on College(703) to Rollins St., west(left) on Rollins to H&I, north(right) on H&I to Visitor Parking Lot (-)

---from North: Hwy 634, south to Interstate 70, west(left) on I-70 to Hwy 635, south(right) on 635 to Stadium Blvd., west(right) on Stadium Blvd. to College(703), north(right) on College(703) to Rollins St., west(left) on Rollins to H&I St., north(right) on H&I to Visitor Parking Lot (-)

---from East: I-70 west to Hwy 630, south(right) on Hwy 630 to Stadium Blvd., west(right) on Stadium Blvd. to College(703), north(right) on College(703) to Rollins St., west(left) on Rollins to H&I St., north(right) on H&I to Visitor Parking Lot (-)



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*****PHONE NUMBERS AND ADDRESSES YOU MAY NEED*****

Questions regarding AMCOP may be directed to:

Leslie S. Uhazy
 Division of Biological Sciences
 203 Tucker Hall
 University of Missouri-Columbia
 Columbia, Missouri 65211
 Telephone: 314-882-2816 (Home 314-474-4556)

Questions regarding Registration may also be directed to:

AMCOP
 348 Hearnes Building
 University of Missouri-Columbia
 Columbia, Missouri 65211

Miscellaneous phone numbers and addresses for leaving messages or in the case of emergency:

Mark Twain Residence Hall
 515 South 5th Street
 Columbia, Missouri 65201
 Telephone: 314-449-7211

Division of Biological Sciences
 Tucker Hall
 University of Missouri-Columbia
 Columbia, Missouri 65211
 Telephone: 314-882-6659

University of Missouri Police Department
 Telephone: 314-882-7201

SUMMARY OF AMCOP MEETINGS 1949-85

Year	Meeting Site Speaker & Title Program Officer, Herrick/LaRue Award	Presiding Officer
1949	Univ. Wisconsin, Madison J. G. Baer	<u>H. J. Van Cleave</u>
1950	Univ. Michigan, Ann Arbor W. W. Cort, Trends in Helminthological Research	<u>R. V. Bangham</u>
1951	Purdue Univ., Lafayette, Ind J. E. Ackert, Some Observations on Hookworm Disease ST= W. Balamuth	<u>L. O. Nolf</u>
1952	Univ of Illinois, Urbana, Ill A. C. Walton, ST= W. Balamuth	<u>R. J. Porter</u>
1953	Iowa State College, Ames Ia R. M. Cable, Parasitological Experiences in Puerto Rico ST= W. D. Lindquist	<u>C. A. Herrick</u>
1954	Michigan State Univ, East Lansing, MI G. F. Otto, Mosquitos, Worms, Somoans, and the Parasitologist in Samoa ST= W. D. Lindquist	<u>A. C. Walton</u>
1955	Notre Dame Univ, G. R. LaRue, Relationships in the Development of Digenetic Trematodes ST= W. D. Lindquist	<u>R. M. Cable</u>
1956	Univ. of Iowa, Iowa City, IA W. H. Headlee, ST= F. J. Krudener	<u>W. D. Lindquist</u>
1957	Univ. of Michigan, Ann Arbor, MI A. C. Chandler ST= F. J. Krudener	<u>J. E. Ackert</u>
1958	Kansas State University, Manhattan, KA H. W. Manter, Trematodes of Many Waters ST= F. J. Krudener	<u>G. R. LaRue</u>
1959	Northwestern Univ., Evanston, IL H. Van der Schalie, Contrasting Problems in Control of Schistosomiasis in Egypt and the Sudan ST= D. T. Clark	<u>G. F. Otto</u>
1960	Purdue Univ., Lafayette, IN P. P. Weinstein, Aspects of Growth and Differentiation of Parasitic Helminths <i>in vitro</i> and <i>in vivo</i> . ST= D. T. Clark	<u>E. J. Krudener</u>
1961	Ohio State Univ., Columbus, OH B. Schwartz, Parasitology Old and New ST= D. T. Clark	<u>N. D. Levine</u>
1962	Univ. of Nebraska, Lincoln, NE O. W. Olsen, The Life History of the Hookworm of Fur Seals. ST= D. T. Clark	<u>G. W. Kelley, Jr.</u>
1963	Univ. of Minnesota, St. Paul, MN F. G. Wallace, Observations on the Louisiana State University Inter-american Program in Tropical Medicine ST= D. T. Clark	<u>M. F. Hansen</u>
1964	University of Chicago, Chicago, IL R. E. Kuntz, Paragonimiasis in Formosa ST= E. J. Huggins	<u>D. T. Clark</u>
1965	Kellog Biol. Station, Gull Lake, MI L. Jacobs, Toxoplasmosis ST= E. J. Huggins	<u>P. E. Thompson</u>
1966	Univ. of Illinois, Urbana, IL D. L. De Guisti, The Acanthocephala ST= E. J. Huggins	<u>M. J. Ulmer</u>
1967	Iowa State Univ., Ames, IA N. D. Levine, Parasitology, Problems and Promise ST= E. J. Huggins H= P. M. Nollen [FIRST]	<u>P. J. Silverman</u>
1968	Univ. of Wisconsin, Madison, WI D. R. Lincicome, The Goodness of Parasitism. (with APS & AIBS) ST= J. H. Greve H=W. G. Barnes	<u>F. G. Wallace</u>
1969	Univ. of Cincinnati, Cincinnati, OH H. W. Stunkard, Life Histories and Systematics of Parasitic Flatworms ST= J. H. Greve H=B. Caverny H=T. P. Bonner	<u>H. W. Manter</u>
1970	Loyola, Univ., Chicago, IL M. J. Ulmer, Helminths from Midwest to Mediterranean. ST= J. H. Greve H=J. Blankenspoor	<u>J. L. Crites</u>
1971	Univ. of Louisville, Louisville, KN M. Van der Schalie, Dam Large Rivers - Then What? ST= J. H. Greve H=R. Campbell	<u>E. Etges</u>
1972	Southern Illinois Univ., Carbondale, IL R. M. Cable, The Lighter Side of Parasitology. T. T. Dunagan ST= J. H. Greve H=E. M. Cornford	<u>B. J. Jaskowski</u>
1973	Notre Dame Univ., IN R. F. Riek (Merck), Babesiosis and the Development of <i>Babesia</i> in Ticks PO=R. Thorson ST= J. H. Greve H=? Danley	<u>R. Shumard</u>
1974	Univ. of Michigan, Ann Arbor, MI M. J. Ulmer, Snails, Swamps, and Swimmer's Itch. ST= J. H. Greve H=P. T. LaVerde H=D. Prechel	<u>D. Ameel</u>
1975	Iowa State Univ., Ames, IA P. M. Nollen, Studies on the Reproductive Systems of Parasitic Flat- worms. or All You Wanted to Know About Sex in Worms and Were Afraid to Ask. ST= J. H. Greve H=I. Wittrock L=V. M. Nelson [FIRST]	<u>W. Bemrick</u>
1976	Univ. of Nebraska, Lincoln, NE 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. Klucas	<u>J. Greve</u>

- 1977 Kansas State Univ., Manhattan, KA T. T. Dunagan
A. J. Mac Innis, 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 E. J. Hughhins
J. P. Dubey, Recent Advances in Feline and Canine Coccidia and
Related Organisms. Milo Brandt ST= W. H. Coil H-D. McNair
L-G. Hendrickson
- 1979 Loyola Univ., Chicago, IL D. E. Gilbertson
E. Foor, Basic Studies in Reproduction (in Nematodes).
B. J. Jaskowski ST= W. H. Coil H-G. Plorin H-D. Minchella
L-M. Fletcher
- 1980 Eastern Michigan Univ., Ypsilanti, MI A. D. Johnson
J. R. Williams, Tropical Parasitology at the Junction of the White
and Blue Nile Rivers E. Waffle ST= G. Garoian H-C. L. Williams
L-M. Goldman L-R. Gamble
- 1981 Eastern Illinois Univ., Charleston, IL D. M. Miller
G. D. Cain, Antigenic Variation: New Techniques Applied to Old
Problems B. T. Ridgeway ST= G. Garoian H-J. M. Holly
L-B. N. Tuggle
- 1982 Western Illinois Univ., Macomb, IL D. G. Myer
J. D. Briggs, Biological Control of Invertebrates in International
Programs P. M. Nollen ST= G. Garoian H-D. E. Snyder
L-C. L. Williams
- 1983 Univ. of Illinois, Urbana, IL C. M. Vaughn
H. M. Moon, Speculations on the Pathogenesis of Cryptosporidiosis
with Comparisons to Other Enteric Infections K. S. Todd, Jr.
ST= G. Garoian H-K. J. Hamann L-K. W. Bafundo
- 1984 Univ. of Iowa, Iowa City, IA W. H. Coil
J. Donelson, Genetic Rearrangement and the Basis of Antigenic
Variation in African Trypanosomes. G. D. Cain ST= G. Garoian
H-K. F. Forton L-D. Woodmansee
- 1985 Ohio State Univ., Columbus, OH B. T. Ridgeway
K. D. Murrell, Epidemiology of Swine Trichinosis: Could Both Zenker
and Leuckart be Right? P. W. Pappas ST= G. Garoian H=R. L. Lavy
L=K. F. Forton
- 1986 Univ. of Missouri, Columbia, MO G. T. Cain
Unknown, Title of Talk. PO=L. Uhazy ST= D. Miller
- 1987 Southern Illinois Univ., Edwardsville, IL