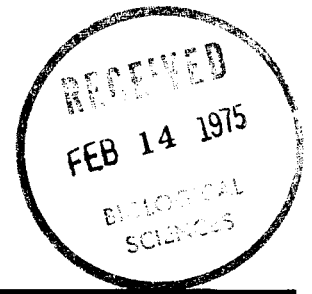


sip

newsletter



society for invertebrate pathology

Volume VII, Number 1
January 1975

VIIIth ANNUAL MEETING
SOCIETY FOR INVERTEBRATE PATHOLOGY
CORVALLIS, OREGON, USA
AUGUST 17-22, 1975

The VIIIth Annual Meeting of the Society for Invertebrate Pathology will be held in Corvallis, Oregon in conjunction with the 26th Annual AIBS Meeting, August 17-22, 1975. Titles and abstracts are to be submitted by March 15, 1975 to the appropriate program co-chairman. The Program Committee to date is planning four major topics for sessions and/or symposia (see Program below). Because of the unique beauty of western Oregon and the opportunity for pursuing outdoor recreational activities, coupled with our desire to encourage families to attend this meeting, it has been decided to set aside Wednesday afternoon as a period for informal activities. Rooms will also be available for meetings and for those wishing to get together for casual discussions during this time. Complete details will be included in future *Newsletters*.

Program Co-Chairmen are:

<u>Insect Pathology</u>	<u>Pathology of Invertebrates Other Than Insects</u>
<i>Dr. Mauro E. Martignoni</i> <i>Forestry Sciences Laboratory</i> <i>3200 Jefferson Way</i> <i>Corvallis, Oregon 97331</i> <i>USA (503) 752-4211</i>	<i>Dr. Michael C. Mix</i> <i>Department of General Science</i> <i>Oregon State University</i> <i>Corvallis, Oregon 97331</i> <i>USA (503) 754-1151</i>

Local Representative is:

Dr. Christopher I. Bayne
Department of Zoology
Oregon State University
Corvallis, Oregon 97331
USA

PROGRAM

The four major topics planned for the 1975 SIP meeting in Corvallis include:

1. History of invertebrate pathology
2. Nosema: some aspects of study
3. Protozoan diseases of invertebrates (other than nosemosis)
4. Viral diseases of invertebrates (other than insects)

If adequate interest is shown by the SIP membership, two additional session topics will be considered:

5. Invertebrate blood cells and their role in defense reactions
6. Neoplasia in invertebrates

The session on history of invertebrate pathology will be organized and chaired by Dr. Phyllis Johnson, Middle Atlantic Coastal Fisheries Center, Oxford, Maryland. In view of the importance of this session it will be scheduled as a plenary event, with no concurrent sessions or symposia. Papers are being solicited on the historical aspects of invertebrate pathology, particularly on the early authors (pre- and post-Pasteurian) who described diseases in the lower animals, including the arthropods, covering a multitude of subjects from the early views of etiology to aspects of biography. If this session on the history of invertebrate pathology proves to be of interest to the membership, the Society may want to make it a permanent feature at future annual meetings. It is hoped that much will be learned about the work of the early illustrious pathologists as well as that of their more obscure colleagues, thus putting in proper perspective present progress and challenges.

The 1975 meeting will emphasize broad interaction between specialists, rather than intensified "shop talk" sessions. Thus, there will be fewer competing formal sessions, although meeting participants are certainly encouraged to organize informal group meetings for specialized discussions during certain periods which have been purposely left free for these as well as other activities. No formal sessions are planned for the evenings. Aside from the AIBS plenary session and the SIP banquet, the remaining evenings will also be free for informal gathering for those who so wish.

ABSTRACTS

The Abstracts of the Annual Meeting of the Society for Invertebrate Pathology will be prepared by direct reproduction of the abstract submitted by each author. There will be no editing of the author's copy. Thus, every error which appears in the submitted abstract will also appear in the printed Abstracts. The Program Co-Chairmen recommend the following procedure for the preparation of the abstract:

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PRESIDENTIAL ADDRESS (SYNOPSIS)

VIIth ANNUAL SIP MEETING, TEMPE, ARIZONA

Among the privileges of an incoming President is the opportunity to express ambitions and goals for the Society for Invertebrate Pathology. At the same time, I am fully aware that this puts the onus of pressing forward along these lines of endeavor squarely on the shoulders of the president.

Dr. Briggs has recently, in a new edition of his list of insect pathologists in the world, accounted for approximately 800 scientists. Our Society now boasts approximately 600 members. To incorporate three-quarters of the available scientists in the world is truly an amazing feat, but then it may reflect the fact that we have a highly devoted and interested group of people in the world that are interested in this field.

I would like to take this opportunity to point out 2 or 3 major points that could be improved upon, to benefit not only the field but the members of the Society. In the first place, I am firmly convinced that there should be more teaching of Invertebrate Pathology in the major universities throughout the world. It is inconceivable to me that a person be trained, for example, in entomology or marine biology and not be thoroughly instructed in the recognition of diseases in the animals that he studies. Students graduating in entomology or marine biology, or in any area of biology for that matter, should have the basic pathology of the animals that he studies; as a prerequisite to this, the student should first have at least a course in elementary microbiology. It is my intention, when the Council meets again, to put before them a resolution that schools teaching invertebrate biology should include pathology in their curriculum. This resolution should be sent forward to the education committees of the various societies that are involved.

The collection and organization of available literature is of paramount importance. An admirable start has been made by Dr. Mauro Martignoni, who has programmed a computer with all of the available information on the insect viruses. Again, Miss Barbara Pilley in England has commenced programming of the available literature on the Microsporida. It is hoped that in this same NEWSLETTER the note will be published, sent forward by Dr. E. U. Canning and Miss Pilley, requesting assistance in this very worthwhile task.

I think everyone would agree that one of the primary requirements for good research is the positive identification of the organisms that are to be studied; not only the identification of the organism is important, but the establishment of the type species and strains and the preservation and storage of these organisms for future workers is absolutely essential. In the past, valuable or interesting organisms have been studied, reported, and then lost. This will continue to happen unless something is done to retain and maintain the cultures reported in the literature. It is here again, in my opinion, that the Society could be effective. Granted there are several organizations in the world that collect and identify and preserve these isolates, however, there are not enough of these to insure that we do not lose valuable specimens. I am going to ask Dr. T. A. Angus, your new Vice President, to investigate all possible means to set up permanent centers throughout the world to preserve the microorganisms that have been and will be isolated. Dr. Angus has been requested to make recommendations to the Council and to the membership at the earliest possible moment.

Other practical goals are control of disease in rearings of insects and other invertebrates, and the development of adequate protocols to insure the safety of microorganisms that are being worked with and are proposed for control of either insects or other invertebrates.

In conclusion, I would like to say that it is my impression that the workers in the field of invertebrate pathology at the present appear to lean more heavily on the basic research side as opposed to the indulgence in more practical studies. Good basic research is important at the onset of the study of any microorganism associated with invertebrates since positive identification of the pathogen and understanding of mode of action, host-pathogen relations, etc., is necessary; however, this imbalance can be harmful to progress. It would be a healthier condition to have almost half of the research in invertebrate pathology devoted to pertinent biology, ecology and epidemiology of the diseased organisms, the hosts, and the host-microorganism relationship. Without such knowledge, applied research proceeds in a semi-blind manner.

I do feel, however, that the field is strengthening and that invertebrate pathology and microbial control are here to stay. If we continue to grow, as a group of scientists, in the next ten years as we have in the last two decades, our progress should be more than satisfactory.

A. M. Heimpel

Insect Pathology Research Laboratory
Plant Industry Station, ARS
Beltsville, Maryland 20705 USA

MICROSPORIDA DIVISION

COMPUTER-BASED DATA RETRIEVAL SYSTEM

A computer-based data retrieval system for the Microsporida is now ready to be put into operation. Once functioning this system will enable the Microsporida Division of the Society for Invertebrate Pathology to make lists of the current literature available to its members. Microsporidologists can improve the efficiency of this service by providing early access to new publications and, in order to avoid the possibility that a paper might be missed in the normal search of primary journals, contributors should send one reprint to each of the organizers named below.

After being analyzed, these references will be given an accession number and filed, thereby forming reference libraries in conjunction with the data retrieval system.

Organizers:

Dr. E. U. Canning
Imperial College Field Station
Ashurst Lodge
Ascot, Berkshire, U.K.

Ms. Barbara M. Pilley
Glasshouse Crops Research Institute
Worthing Road
Littlehampton, Sussex, U.K.

Dr. R. K. Sprenkel
Department of Entomology
Box 5215
North Carolina State University
Raleigh, North Carolina 27607, U.S.A.

SIP IN THE INTERNATIONAL UNION OF BIOLOGICAL SCIENCES

In January 1974 the World Health Organization (WHO) established official relations with the International Union of Biological Sciences (IUBS). IUBS is now one of the 109 non-governmental organizations having an official relationship with WHO. This action by WHO provides new opportunities to the specialized activities within IUBS. Access to WHO activities includes the right to appoint a representative to participate in certain WHO conferences and meetings and the opportunity to submit to the Director General of WHO a memorandum which could be placed on the agenda of the World Health Assembly. The Society for Invertebrate Pathology, serving as the Commission on Invertebrate Pathology in IUBS, can take advantage of this working relationship between IUBS and WHO. The SIP affiliation with the World Federation of Parasitology also provided this opportunity beginning in 1972. The activities of the Commission on Invertebrate Pathology place a new and greater responsibility on invertebrate pathologists to provide leadership within the Total IUBS structure.

What are the responsibilities that should be assumed by SIP, serving as the Commission on Invertebrate Pathology? I have accepted an appointment by Dr. Heimpel to represent the interest of the Society in IUBS. In the next NEWSLETTER I will attempt to develop a proposed set of operating statutes for the Commission which can evolve through the years to capitalize on the strengths of the Society. I was prompted to begin the formulation of operational statutes for the Commission when I visited the Secretariat of IUBS in Paris in November. I had a two-hour conference with Dr. P. H. Bonnel, Executive Secretary of IUBS, during which he carefully reviewed the ways and means by which SIP could most effectively serve within IUBS. Two areas which were the subject of discussion concern the culture collections and availability of pathogens of invertebrates and the general subject of invertebrate pathobiology education in the biological sciences. As a result of our discussions on these and other topics, the Commission, and therefore the Society, will pursue the coordination of collections and the opportunity to obtain support for the establishment of collections of invertebrate pathogens as suggested by Dr. Heimpel in his Presidential Address. The multi-disciplinary Commissions within IUBS with which invertebrate pathology interests will be coordinated are the Commission on Culture Collections and the Commission on Microbial Ecology. Further, the expressed interest within SIP for attention to contributions of pathobiology in education will be investigated through the Commission on Biological Education.

In conclusion, I will propose statutes for operation of the Commission on Invertebrate Pathology and present them in the next issue of the NEWSLETTER for your comment and modification. It is important that the operation and activities of the Commission represent the best efforts of invertebrate pathologists internationally. Serving as the liaison for the Society to IUBS through the Commission, I will seek the broadest international contributions to our activities.

John D. Briggs
The Ohio State University
1735 Neil Avenue
Columbus, Ohio 43210 USA

PUBLICATIONS

Disease in a Minor Chord, by Edward A. Steinhaus, is scheduled for spring publication by the Ohio State University Press. The approximate cost of the book will be \$15.00.

Almost completed at the time of his death, Dr. Steinhaus' book has been edited for publication in accordance with his intentions by his wife Mabry. Disease in a Minor Chord, subtitled "Being a Semihistorical and Semi-biographical Account of a Period in Science When One Could Be Happily, Yet Seriously Concerned with the Diseases of Lowly Animals without Backbones, Especially the Insects," traces the history of the emergent discipline of insect pathology.

Copies of the book may be obtained by writing to:
Ohio State University Press
2070 Neil Avenue
Columbus, Ohio 43210 USA

Insect Diseases (in two volumes) edited by George E. Cantwell is now available.

This two-volume book provides advanced undergraduate and graduate students, environmentalists, ecologists, and agronomists with a cogent introduction to insect pathology. Subject areas covered in the text include: Volume 1--Diagnostic Techniques, G. Thomas; Virus and Rickettsial Diseases, J. Vaughn; Bacterial Diseases, R. Faust; Mycoses, J. Bell; Protozoan Infections, W. Brooks. Volume 2--Symbiology: Mutualism between Arthropods and Microorganisms, G. Boush and H. Coppel; Nematode Infections, W. Nickle; Radiation, Neoplasm, Carcinogenic Chemicals, and Insects, J. Harshbarger; Hormonal Induced Pathologies, W. Walker; Genetic Pathology, P. Bryant; Honey Bee Diseases, Parasites, and Pests, G. Cantwell.

Copies of Volume 1 at a cost of \$24.50 (textbook edition in the U.S. and Canada, \$17.50) and Volume 2 at a cost of \$24.50 may be obtained from:

Marcel Dekker, Inc.
270 Madison Avenue
New York, New York 10016 USA

Below is a list of selected papers by Latin American scientists, some of which have not been published in international journals and may be of interest to Society members who might not otherwise have access to this information. It is hoped that similar material will be provided for the Newsletter.

Leon Q., G. and Vaughan, M. 1971 Tercer seminario tecnico sobre el cultivo del algod6n: Parasitologia. Resultado de estudios sobre control integrado en TELICA (LEON), 1970-71. Univ. Nacional Aut6noma de Nicaragua y Banco Nacional de Nicaragua, Managua, Nicaragua

Cujar M., A., et al. 1971 Efectividad del DIPEL, una formulaci6n a base de la bacteria Bacillus thuringiensis B. para el control de Heliothis spp. en el algod6nero. Dept. Tecnico Agricola, Federaci6n Nacional de Algodoneros, Bogota, Columbia, 14 de junio de 1971

Bustillo, A. and Lara, I. 1971 Plagas forestales. Bolet6n de Divulgaci6n, No. 33, Regional No. 4, Instituto Colombiano Agropecuario, Oficina de Comunicaciones Centro Tulio Ospina, Medellin, Columbia

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MEETINGS

American Society for Microbiology, Annual Meeting April 27 - May 2, 1975; New York, New York

The 75th Annual Meeting of the American Society for Microbiology will be held at the New York Hilton Hotel and the Americana of New York. Registration may be made by writing to ASM, 1913 "Eye" St., N.W., Washington, D.C., 20006, USA. Abstracts of the Annual Meeting of the American Society for Microbiology may be purchased by members for \$5 and non-members for \$10 by mailing payment to ASM Publications Office, 1913 "Eye" St., N.W., Washington, D.C., 20006, USA.

First Intersectional Congress of the International Association of Microbiological Societies (IAMS) September 1 - 7, 1974; Tokyo, Japan

The organizers of this Congress proposed a symposium on the Microbial Control of Insect Pests and selected Dr. K. Aizawa of the Kyushu University as convener of the symposium. The Congress was well attended with over 1700 registrants.

Dr. C. Vago of France and Dr. Y. Tanada of the United States served as co-chairman of the symposium. The following papers were presented:

Selection and utilization of *Bacillus thuringiensis* strains for microbial control; *Aizawa, K., Fujiyoshi, N., Ohba, M., and Yoshikawa, N.*

The nature of *Bacillus thuringiensis* endotoxin; *Morris, J. R. and Somerville, H. J.*

Control of forest pest insects by viruses; *Katagiri, K.*

Epizootiology of virus diseases in insects; *Tanada, Y.*

Multiple viral infections of insect cells and host pathogenesis: Multicomponent viral insecticides; *Kurstak, E., Garzon, S., and Onji, P. A.*

Effect of insect pathogens on *in vitro* cultured cells; *Vago, C.*

Distribution of viruses of the fall webworm in soil; *Hukuhara, T.*

Growth requirements of entomogenous bacteria and the nature of some bacterial diseases of insects; *E. G. Afrikian*

Discussant:

Application of a nuclear polyhedrosis virus for the control of the cotton leafworm; *Okada, M.*

When Dr. Vago introduced the meeting on Microbial Control within the framework of the Congress of Microbiology, he explained the role of the Society for Invertebrate Pathology as well as that of the Commission on Invertebrate Pathology of IUBS. He specified that the Society and the Commission are greatly interested, not only in the development of microbial control, but also in the exchange of information relevant to that field.

Nearly all of the papers aroused much discussion, but unfortunately time was limited and the discussion could not be prolonged. The Proceedings will be published in type-offset form.

Prior to the Congress, President A. M. Heimpel of SIP appointed Aizawa, Tanada, and Vago to serve as a delegation to represent the Society at the Congress. The chairman of the delegation was Dr. Vago. The delegation carried out the objectives assigned to them by President Heimpel. The objectives were: (1) announcement to the IAMS of the presence of the delegation from the Society of Invertebrate Pathology which serves as the Commission on Invertebrate Pathology in IUBS, (2) expression by the delegation of the Society's interests in microbial control of insects and concern for the impact of insect pathogens on nontarget organisms, (3) identification of subjects for comparative exchange of information and initiation of cooperative education and research activities on the use of microorganisms for management of invertebrate populations.

The delegation orally expressed these objectives to the Organization Committee of the Congress, personally to Professor Hidaka, Chairman of the Committee. This communication and the symposium have enabled our Society and our Commission to inform a large international audience concerning our activities and objectives in the field of invertebrate pathology, including microbial control.

The general consensus was that the symposium was a success, and the group strongly recommended that microbial control and other areas of insect pathology be continued in future congresses of IAMS.

Dr. Y. Tanada
Division of Entomology and
Parasitology
333 Hilgard Hall
University of California
Berkeley, California 94720

Pathobiology of Invertebrate Vectors of Disease March 17-19, 1975; New York, New York

This Conference is being sponsored by the New York Academy of Sciences and is being held at The Delmonico Hotel, Park Avenue at 57th Street. A block of rooms has been set aside in the Delmonico Hotel for Conference participants and further information on reserving rooms can be obtained from the Conference Chairmen:

Dr. L. A. Bulla, Jr.
U.S. Grain Marketing Research
Center, USDA
Manhattan, Kansas USA

Dr. T. C. Cheng
Institute for Pathobiology
Lehigh University
Bethlehem, Pennsylvania USA

The Conference Advisory Committee includes:

G. St. Julian
Northern Regional Research
Center, USDA
Peoria, Illinois USA

J. Wm. Vinson
Department of Microbiology
School of Public Health
Harvard University
Boston, Massachusetts

A. Spielman
Department of Tropical
Public Health
School of Public Health
Harvard University
Boston, Massachusetts USA

J. A. Wise
Department of Pathobiology
School of Public Health and
Community Medicine
University of Washington
Seattle, Washington USA

Following is the Program for the meeting:

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PATHOBIOLOGY OF INVERTEBRATE VECTORS OF DISEASE

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MONDAY, MARCH 17, 1975

8:00 A.M.

REGISTRATION

9:00 A.M.

INTRODUCTORY REMARKS

Invertebrate Systems for Pathobiological Investigations. L. A. Bulla, Jr., Ph.D., U.S. Grain Marketing Research Center, U.S. Department of Agriculture, Manhattan, Kansas, and G. St. Julian, M.S., Northern Regional Research Center, U.S. Department of Agriculture, Peoria, Ill. (10 minutes)

9:15 A.M.

RICKETTSIAE IN ARTHROPOD TISSUES

Session Chairman: J. Wm. Vinson, Ph.D.
Department of Microbiology
School of Public Health
Harvard University
Boston, Mass.

1. Modification of Anti-typhus Antibodies on Passage through the Gut of the Human Body Louse--C. L. Wisseman, Jr., M.D., and J. Boese, Ph.D., University of Maryland, School of Medicine, Baltimore, Md. (20 minutes)
2. Virulence of *Rickettsia prowazeki* Head Lice--E. S. Murray, M.D., Department of Microbiology, School of Public Health, Harvard University, Boston, Mass. (20 minutes)
3. Murine Typhus Rickettsiae in the Oriental Rat Flea--S. Ito, Ph.D., Department of Anatomy, Harvard Medical School, and J. Wm. Vinson, Ph.D., Harvard School of Public Health, Harvard University, Boston, Mass. (20 minutes)
4. Mechanisms of Transovarial Infection of Spotted Fever Rickettsiae in Ticks--W. Burgdorfer, Ph.D., Rocky Mountain Laboratory, National Institute of Allergy and Infectious Diseases, National Institutes of Health, Hamilton, Montana. (20 minutes)
5. Attempted Infection and Transovarial Transmission of *Rickettsia tsutsugamushi* in Three Species of *Leptotrombidium* Mites--J. S. Walker, D.V.M., T. C. Chan, C. Manikumar, B. L. Elisberg, M.D., U.S. Army Medical Research Unit, Institute for Medical Research, Kuala Lumpur, Malaysia, and Walter Reed Army Institute of Research, Washington, D.C. (20 minutes)
6. Identification of *Rickettsia tsutsugamushi* in All Life Stages of *Leptotrombidium* (L.) *fletcheri* Using Isolation and Microdissection Techniques--L. W. Roberts, Ph.D., E. Gan, B.S., G. Rapmund, M.D., T. C. Chan, S. M. Ramasamy, B. L. Elisberg, M.D., and J. S. Walker, D.V.M., U.S. Army Medical Research Unit, Institute for Medical Research, Kuala Lumpur, Malaysia, and Walter Reed Army Institute of Research, Washington, D.C. (20 minutes)
7. Acquisition of *Rickettsia tsutsugamushi* by Chiggers During the Feeding Process--R. Traub, Ph.D., C. L. Wisseman, Jr., M.D., M. Jones, B.S., and J. J. O'Keefe, University of Maryland, School of Medicine, Baltimore, Md. (20 minutes)

Discussion (25 minutes)

12:15 P.M.

LUNCHEON BREAK

2:00 P.M. to 5:00 P.M.

VERTICAL TRANSMISSION OF MICROORGANISMS IN ARTHROPODS

Session Chairman: A. Spielman, Sc.D.
Department of Tropical Public Health
School of Public Health
Harvard University
Boston, Mass.

8. Transovarial Transmission of Rickettsiae in Mosquitoes--J. Yen, Dr. P. H., Division of Epidemiology, School of Public Health, University of California at Los Angeles. (25 minutes)
9. Ecology of Keystone Virus, a Transovarially Maintained Arbovirus--J. W. Le Duc, M.S., J. F. Burger, B. F. Eldridge, Ph.D., and P. K. Russell, M.D., Walter Reed Army Institute of Research, Washington, D.C. (20 minutes)

10. Transovarial Passage of LaCrosse Virus in Tree Hole Mosquitoes--D. M. Watts, Ph.D., Department of Entomology, Walter Reed Army Institute of Research, Washington, D.C. (25 minutes)

11. Transovarial Transmission of Viruses by Phlebotomine Sandflies--R. B. Tesh, M.D., and B. N. Chaniotis, Ph.D., Pacific Research Station, National Institutes of Health, Honolulu, Hawaii. (25 minutes)

12. Reproduction in *Ornithodoros moubata* and Transovarial Transmission of *Dorrelia auttoni*--A. Aeschlimann, Ph.D., Faculté des Sciences, Institut des Zoologie, Université de Neuchâtel, Neuchâtel, Switzerland. (20 minutes)

13. Vertical Transmission of Bacteria in the Tsetse Fly--D. L. Denlinger, Ph.D., The Biological Laboratories, Harvard University, Cambridge, Mass. (10 minutes)

14. Vectors and Vertical Transmission - an Epidemiological Perspective--P. E. M. Fine, Ph.D., V.M.D., Department of Medical Protozoology, University of London School of Hygiene and Tropical Medicine, London, England. (25 minutes)

Discussion (25 minutes)

Guest dinner speaker is Dr. John D. Briggs, Ohio State University, who will address us on "Invertebrate Pathology in the International Union of Biological Sciences".

TUESDAY, MARCH 18, 1975

9:00 A.M.

COMPARATIVE EFFECTS OF VIRUSES ON ARTHROPOD AND VERTEBRATE CELLS

Session Chairman: J. A. Wise, Ph.D.
Department of Pathobiology
University of Washington
Seattle, Washington

15. Arbovirus Infection of Vertebrate and Insect Cell Cultures--S. M. Buckley, M.D., Department of Epidemiology and Public Health, Yale University, New Haven, Connecticut. (30 minutes)
16. Multiple Infections of Invertebrate Cells by Viruses--E. Kurstak, Ph.D., Department of Microbiology and Immunology, University of Montreal, Montreal, Canada. (30 minutes)
17. *In Vivo* Behavior of a Sindbis Virus Mutant Isolated from Persistently Infected *Aedes aegypti* Cell Cultures--J. Peleg, Ph.D., Israel Institute for Biological Research, Ness-Ziona, Israel. (30 minutes)
18. Observations on *Aedes albopictus* Cell Cultures Persistently Infected with Sindbis Virus--V. Stollar, M.D., Rutgers Medical School, New Brunswick, New Jersey. (30 minutes)
19. The Role of Lipids in Arbovirus Infections of Mammalian and Insect Cells--H. Jenkin, Ph.D., The Hormel Institute, University of Minnesota, Austin, Minnesota. (30 minutes)
20. Viral Receptors and Their Role in Host and Tissue Specificity (discussion paper)--J. A. Wise, Ph.D., University of Washington, Seattle, Washington. (15 minutes)
21. Cellular Resistance to Arbovirus Infection (discussion paper)--F. A. Murphy, D.V.M., Ph.D., Public Health Service, Center for Disease Control, Atlanta, Georgia. (15 minutes)

Discussion (30 minutes)

12:30 P.M.

LUNCHEON BREAK

2:00 P.M. to 5:00 P.M.

PATHOGENIC EFFECTS OF PLANT DISEASE AGENTS ON VECTOR INSECTS

Session Chairman: L. M. Black, Ph.D.
Department of Botany
University of Illinois
Urbana, Illinois

22. Pathogenicity of Mycoplasmas to Insects--R. F. Whitcomb, Ph.D., Institute of Plant Protection, Beltsville Agricultural Research Center (West), U.S. Department of Agriculture, Beltsville, Maryland. (25 minutes)

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PATHOBIOLOGY OF INVERTEBRATE VECTORS OF DISEASE

Continued from page 5

23. Molluscites and Rickettsia-like Plant Disease Agents in Insects--K. Maramorosch, Ph.D., Institute of Microbiology, Rutgers University, New Brunswick, New Jersey. (25 minutes)

24. Mechanism of Vector Specificity for Aphid-Transmitted Plant Viruses--W. F. Rochow, Ph.D., Agricultural Research Service, U.S. Department of Agriculture and Plant Pathology Department, Cornell University, Ithaca, New York. (25 minutes)

25. Studies of Potato Yellow Dwarf Virus and Wound-Tumor Virus in Plants and Insect Vector Cell Cultures--L. M. Black, Ph.D., Department of Botany, University of Illinois, Urbana, Illinois. (25 minutes)

26. Comparative Studies on the Pathogenesis of Mosquito Syncytium-forming Agents in Various Arthropod Cells--H. Hirumi, M.D., Boyce Thompson Institute for Plant Research, Yonkers, New York. (25 minutes)

27. Interactions Between Nuclear Polyhedrosis Viruses and Vertebrate Cells--A. H. McIntosh, Ph.D., Institute of Microbiology, Rutgers University, New Brunswick, New Jersey. (25 minutes)

Discussion (30 minutes)

WEDNESDAY, MARCH 19, 1975

9:00 A.M.

PATHOBIOLOGY OF NON-INSECT INVERTEBRATES

Session Chairman: B. J. Bogitsh, Ph.D.
Department of Biology
Vanderbilt University
Nashville, Tennessee

28. A Search for the Antibody Beginnings in Asterias and Ascidia--F. B. Bang, M.D., Department of Pathobiology, School of Hygiene and Public Health, The Johns Hopkins University, Baltimore, Maryland. (25 minutes)

29. Biochemistry of Molluscan Phagocytes--T. C. Cheng, Ph.D., and Cary E. Rodrick, Ph.D., Institute for Pathobiology, Lehigh University, Bethlehem, Pennsylvania. (25 minutes)

30. Genetic Studies on Pathological Conditions and Susceptibility to Infection in *Biomphalaria glabrata*--C. S. Richards, Ph.D., Laboratory of Parasitic Diseases, National Institutes of Health, Bethesda, Maryland. (25 minutes)

31. Secondary Daughter Sporocysts of *Schistosoma mansoni*: Their Occurrence and Cultivation--E. Hansen, Ph.D., Clinical Pharmacology Laboratory, Berkeley, California. (25 minutes)

32. Tumors in Gastropods--E. H. Michelson, Ph.D., School of Public Health, Harvard University, Boston, Massachusetts. (25 minutes)

33. A Cytochemical Study of the Effects of *Schistosoma mansoni* on *Biomphalaria glabrata*--B. J. Bogitsh, Ph.D., and O. S. Carter, Ph.D., Department of Biology, Vanderbilt University, Nashville, Tennessee. (25 minutes)

34. Heavy Metal Toxicity to *Biomphalaria glabrata*--J. T. Sullivan, M.S., Institute for Pathobiology, Lehigh University, Bethlehem, Pennsylvania. (25 minutes)

Discussion (35 minutes)

12:30 P.M.

LUNCHEON BREAK

2:00 P.M. to 5:00 P.M.

MOLLUSC-PARASITE INTERACTIONS

Session Chairman: F. Etges, Ph.D.
Department of Biological Sciences
University of Cincinnati
Cincinnati, Ohio

35. The Fine Structure of Encapsulation in *Biomphalaria glabrata*--K. R. Harris, Ph.D., Department of Biology, Adelphi University, Garden City, New York. (20 minutes)

36. Ultrastructural and Cytochemical Activities in Molluscan Schistosomiasis--P. L. Krupa, Ph.D., Department of Biology, The City College of the City University of New York, New York. (20 minutes)

37. Physiological Interactions in the *Schistosoma mansoni*-*Biomphalaria glabrata* Complex--F. J. Etges, Ph.D., Department of Biological Sciences, University of Cincinnati, Cincinnati, Ohio. (20 minutes)

38. Biochemical Alterations in Helminth-Infected Molluscs--C. P. Hoskin, Ph.D., Department of Biology, Lafayette College, Easton, Pennsylvania. (20 minutes)

39. Symbiosis and Attenuation--M. A. Brooks, Ph.D., Department of Entomology, Fisheries and Wildlife, University of Minnesota, St. Paul, Minnesota. (20 minutes)

40. The Host-Parasite Interrelationships Between The Polyploids of *Bulinus s. s.* and *Schistosoma haematobium* from Egypt--P. T. LoVerde, Ph.D., Museum of Zoology, University of Michigan, Ann Arbor, Michigan. (20 minutes)

41. Environmental Significance of *Baculovirus* Infections in Estuarine and Marine Shrimp--J. A. Couch, Ph.D., Gulf Breeze Environmental Research Laboratory, U.S. Environmental Protection Agency, Gulf Breeze, Florida. (20 minutes)

Discussion (40 minutes)



(left to right) Dr. M. Brooks, Dr. A. Huger and Dr. J. Weiser, Dr. C. Vago
Third International Congress of Parasitology, Munich, August 25-31, 1974

SIP COMMITTEES

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**RECENT DONATIONS TO THE INTERNATIONAL PROTOZOAN
TYPE SLIDE COLLECTION**

Mr. Gary G. Wilson
Insect Pathology
Research Laboratory
P.O. Box 490
Saulte Ste. Marie
Ontario, Canada

Received: February 16, 1972
Accession No: 298024
USNM Cat. No: 24279 - 24282
Material: 4 slides; syntypes;
Nosema juli

Dr. E. E. Jones
Department of
Biological Sciences
University of South
Alabama
Mobile, Alabama 36688
USA

Received: March 22, 1972
Accession No: 298427
USNM Cat. No: 24313 - 24315
Material: 3 slides; holotypes;
Paracineteta lineata,
P. meridionalis and
P. estuarina

Dr. E. E. Jones
(address above)

Received: August 18, 1972
Accession No: 300818
USNM Cat. No: 24316 - 24321
Material: 2 slides; holotypes;
Cienkowskyia arborescens,
Stephanopogon mobilensis
4 slides; undesignated;
Dileptus beersi,
Euplotes nana

Dr. Arthur J. Repak
Quinnipiac College
Mount Carmel Avenue
Box 158
Hamden, Conn. 06518
USA

Received: August 30, 1972
Accession No: 303734
USNM Cat. No: 24324 - 24327
Material: 3 slides; paratypes;
Blepharisma wardsi,
B. trinodatum and
B. seculum
1 slide; paralectotype;
Blepharisma tropicum

Mr. E. Siebert
Friday Harbor
Laboratory
University of
Washington
Friday Harbor,
Washington 98250 USA

Received: August 21, 1972
Accession No: 300830
USNM cat. No: 24311 - 24312
Material: 2 slides; holotype
and paratype;
Haplozoon axiothellae

Dr. Eugene M. Burreson
Marine Science Center
Oregon State University
Newport, Oregon 97365
USA

Received: February 15, 1973
Accession No: 303533
USNM Cat. No: 24322 - 24323
Material: 2 slides; holotype
and paratype;
Parahypocoma
rhamphisokarya

Mr. Mike Moser
Department of
Biological Sciences
University of
Southern California
Santa Barbara,
California 93106 USA

Received: May 2, 1974
Accession No: 301699
USNM Cat. No: 24368 - 24371
Material: 4 slides; syntypes;
Myxoproteus abyssus,
Leptotheca armatura

Prof. A. Amaro
Instituto Oswaldo Cruz
Divisao de Zoologia
Secao de Protozoologia
Caixa Postal 926
Rio de Janeiro, G.B.
Brazil

Received: May 27, 1965
Accession No: 260370
USNM Cat. No: 24289 - 24310
Material: 9 slides; syntypes;
Zelleriella freitasi,
Z. caryosoma, and
Z. proterocarya
13 slides; not type
material; Opalina
elongata, Zelleriella
sp., Z. ovonucleata,
and Z. cornucopia

Received: March 18, 1966
Accession No: 265237
USNM Cat. No: 24283 - 24288
Material: 6 slides; not type
material; Cepedea
mogyana, Zelleriella
antunesi

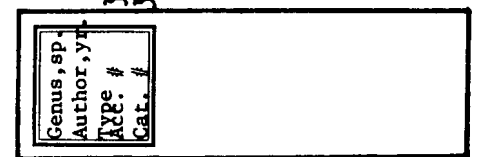
Below is a schematic diagram for slide preparation.

Burdette W. Erickson, Jr.
Standing Committee on
Type Slide Collections

805 Quince Orchard Boulevard #31
Gaithersburg, Maryland 20760 USA

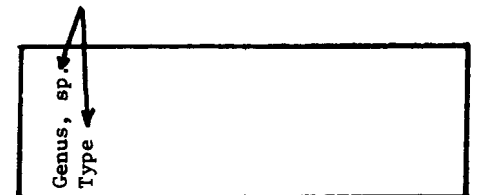
**Schematic Diagram of Slide
Preparation for Deposition**

Width of slide and 1/8" in height (4 mm)



Obverse Side

Etched into glass with diamond stylus



Reverse Side

The following two collections of protozoan slides have been recently catalogued, although they were donated to the museum some time ago:

VIIIth ANNUAL SIP MEETING

Continued from page 1

1. Use a typewriter, preferably electric, with a carbon ribbon. If such a typewriter is unavailable, use a typewriter with a fairly new black ribbon.
2. Place the enclosed sample abstract form under a blank typing sheet, and insert in the typewriter. The dark lines will show through the usual grades of typing paper.
3. Single space all typing. The title, authorship, affiliation, and text must be within the boxes as outlined on the enclosed sample form. Leave no top or left margin within the boxes. Type only within the space outlined on the sample form. Each abstract must be limited to one single page.
4. The Style Manual for Biological Journals, published by the American Institute of Biological Sciences, should be used as a guide to abbreviations and symbols. Proprietary and trade names must be accompanied, at first mention, by the established or generic names. When using abbreviations for compounds, the name must be spelled in full at the first mention.
5. Remember! Your abstract will be printed exactly as submitted. Any smudges, errors, and misspellings on your copy will be evident also in the published Abstracts!
6. Poorly typed abstracts, unsuitable for direct reproduction, will be returned to the authors for retyping. Unless these abstracts are retyped promptly, they may miss the printer's deadline and may not appear in the published Abstracts.
7. Send your abstract no later than March 15, 1975, to the Program Co-Chairmen (see page 1).

Your local program committee welcomes ideas or suggestions concerning our annual meeting.

Dr. Mauro E. Martignoni
Dr. Michael C. Mix

PUBLICATIONS

Continued from page 3

- Cujar, M., A., et al. 1972 Tres ensayos de campo con el virus de Heliothis spp. en el algodón. Dept. Técnico-Agrícola, Federación Nacional de Algodoneros, Bogotá, Colombia, junio de 1972
- Stejskal, M. 1972 Gregarinas (Protozoa) parasitos de abejas Apis mellifica L. en Venezuela. Turrialba, 22 (1), 30-39
- Fresa, R. 1971 El hongo Entomophthora grylli en tucuras. Revista de Investigaciones Agropecuarias, INTA, Serie 5, Patología Vegetal, 8(2), 83-88
- Gonzales-Cabrera, J. A. 1973 Susceptibilidad de Dermatobia hominis al Bacillus thuringiensis y a un insecticida químico. Tesis de Grado de Ingeniero Agronomo, Univ. Costa Rica, San Jose, Costa Rica
- Jiménez-Lacharme, F. 1973 Estudio comparativo de patogenicidad de diferentes variedades del Bacillus thuringiensis en larvas de primer instar de Hypsipyla grandella (Zeller). Tesis de Grado de Ingeniero Agronomo, Univ. Costa Rica, San Jose, Costa Rica

Requeno M., E. 1974 Efecto de la radiación ultravioleta en Bacillus thuringiensis (Berliner). Tesis para grado de Ingeniero Agronomo, Univ. Costa Rica, San Jose, Costa Rica

Quezada, J. R. 1972 Algunas especies de artrópodos y sus enemigos naturales en El Salvador, Segunda Epoca 1(1), 19-28

Berrios, F. and Hidalgo-Salvatierra, O. 1971 Estudios sobre el barrenador Hypsipyla grandella Zeller. VI Susceptibilidad de la larva al hongo Metarrhizium anisopliae (Metch). Turrialba, 21(2), 214-219

Berrios, F. and Hidalgo-Salvatierra, O. 1971 Estudios sobre el barrenador Hypsipyla grandella Zeller. VIII. Susceptibilidad de la larva a los hongos Beauveria bassiana (Bal.) y Beauveria tenella (Del.). Turrialba, 21(4), 451-454

Gruner, L. 1973 Sensibilisation des larves de Phyllophaga pleei BL. et de P. patrueloides PA. (Coleoptera: Scarabaeidae) a la mycose a Metarrhizium anisopliae sorokin au moyen d'une faible dose d'insecticide ou d'un autre agent infectieux. Ann. Zool.-Ecol. anim. 5(3), 335-349

Cornejo, Luis G. and Rossi, Carlos O. 1974 Enfermedades de las abejas: Su profilaxis y prevencion, Editorial Ciencia y Abejas, Buenos Aires, Argentina

This information was provided by:

Dr. Goro Kuno
University of Puerto Rico
Department of Biology
Entomology Pioneering
Research Laboratory
Mayaguez, Puerto Rico 00708 USA

POSITION WANTED

Michelle Bistransin is seeking a position in marine invertebrate pathology and immunology. She will receive her M.S. in August 1975 from Louisiana State University in General Zoology with a minor in Marine Science. Ms. Bistransin has done clinical work and immunologic research in a parasitology laboratory and is also interested in biotoxicology of marine organisms. Further information may be obtained by writing:

Michelle Bistransin
Department of Zoology and Physiology
Louisiana State University
Baton Rouge, Louisiana 70803 USA

ASSISTANTSHIP AVAILABLE

Graduate Research Assistantship available July 1, 1975. M.S. and/or Ph.D. program. Twelve-month appointment. Stipend and remission of fees relative to degree obtained and experience. Prefer student interested in insect virus mutagenesis. Further information may be obtained by writing:

C. F. Reichelderfer
Department of Entomology
University of Maryland
College Park, Maryland 20742 USA

SIP NEWSLETTER

Beatrice A. Weaver, Editor
c/o Department of Entomology
The Ohio State University Telephone:
1735 Neil Avenue (614) 422-1367
Columbus, Ohio 43210 USA

Biochemical comparisons of four small iridescent insect viruses

D. C. KELLY, R. J. AVERY, N. F. MOORE, AND D. E. VANCE

University of Warwick, Coventry, England

Iridescent virus types 2, 6, 9 and 18 are viruses of similar size and morphology. In this paper we report studies of the lipids, proteins, and deoxyribonucleic acid content of the viruses.

Lipid extracted from two iridescent viruses (types 2 and 6) have been analysed using thin layer chromatography. The lipids comprise 9% of the iridescent virus particle by weight which is equivalent to 59 million daltons per particle. Negatively stained virus particles and thin sections of virus particles indicate that a membrane is located internally. There is sufficient lipid in each virus particle to accommodate a continuous lipid bilayer at this internal site. Our analyses indicate that the lipid is unlikely to be derived directly from plasma membranes of cells.

The proteins of the four viruses have been analysed using preparative and analytical acrylamide gel electrophoresis. Each virus contains about 20 proteins. The major structural protein comprises about 50% of the protein. This protein has been demonstrated to be located at the periphery of the virus particle by selective iodination techniques. The purified major structural protein has been subjected to N'terminal and total amino acid analysis. Each protein has one N'terminal amino acid - proline in all the viruses. The amino acid analyses of the major proteins from the four viruses are similar, and are consistent with the properties of a capsid protein as opposed to a deoxyribonucleoprotein.

The DNA extracted from the viruses has been studied using renaturation kinetics. This technique has enabled us to estimate the molecular weights of the iridescent virus genome, and to demonstrate possible repeated sequences (i.e. redundancy) in the genome. Quantitative DNA-DNA homology studies have been performed on the DNA preparations.

We conclude that the four small iridescent viruses we have studied are structurally similar, but genetically heterogeneous.

SAMPLE ABSTRACT