sip

NEWSLETTER

society for invertebrate pathology

VOLUME 34, NUMBER 2

June, 2001

2001 ANNUAL MEETING: NOORWIJKERHOUT, THE NETHERLANDS

General

The organizers of the 34th Annual Meeting of the Society for Invertebrate Pathology (SIP2001) are nearly ready to receive the participants at the Leeuwenhorst Conference Hotel in Noordwijkerhout at the end of August. The deadline for early registration and payment (May 15th) has duly passed. As of June 1st the number of registrants is 325 and late registrations are still trickling in. The Dutch and Israeli committees are working closely together to shape a nice program. This second announcement contains further information about the conference.

Registration. August 1, 2001, is the absolute deadline for late registration. **On-site registration at the Conference Hotel is possible, but single-day registration is not accepted.** The registration fee includes access to the scientific and social program, Program & Abstract book, mixer, barbecue, conference dinner, refreshments and transportation during the conference. The member fee is only applicable to members in good standing (according to the SIP membership list) on August 25. **All late registrants must pay the late fee.** Registration packages will be distributed on Saturday afternoon August 25 from 15.00 h to 19.00 h and on Sunday from 8.00 h until 12.00 h in the Conference Hotel (follow signs). Receipts will be provided and remaining financial matters settled.

Accommodations. The accommodation fee includes accommodation (5 nights), all meals (breakfast, lunch and dinner) and access to the hotel lounges and sports and recreational facilities (large indoor swimming pool!). Single room (1,200 Dutch guilders) and double room (950 Dutch guilders)

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SIP Office

Please send all correspondence, membership applications and changes of address to our Executive Secretary, Margaret (Peg) Rotstein at:

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Homepage: http://www.sipweb.org
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Note: Toll Free numbers for Canada & USA only

occupancy are offered during the conference. Those requiring accommodation prior to or after the meeting should indicate this separately to the local organizers. Student registrants need to include a written statement from their educational institution, or from the student's supervisor known to the Society, at registration. Registrants will be notified about their registration and payment upon receipt. Late registration does not guarantee accommodation in the Conference Hotel. After August 1 accommodation cannot be guaranteed and is possible based on space availability only.

Cancellation policy. Cancellations are only accepted before August 1, 2001. A handling charge of 150 Dutch guilders is withheld. After August 1, returns cannot be guaranteed due to required registrations with the Conference Hotel.

Location. Noordwijkerhout is located in the heart of the 'lowlands' in the western part of the Netherlands and is a major Dutch bulb-growing region. It is close to the seashore (25-min walk) and within reasonable distance from Amsterdam (hourly bus service, 37 km), Leiden, Delft and The Hague (25 km). Schiphol Airport, also known as Amsterdam Airport, is 40 min (25 km) away and the main port of air entry into the Netherlands. It has connections to all major airports around the world and by train with most cities in Europe. The airport is 40 min (25 km) away by car from the Conference Hotel.

Venue. The Golden Tulip Conference Hotel Leeuwenhorst is a modern conference facility with a friendly atmosphere. The hotel is fully equipped

SIP NEWSLETTER

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The SIP Newsletter is published 3 times per year and is available on our homepage.

Submissions to the following sections are solicited:

Forum: More substantial articles on current issues of concern, limited to approximately five pages.
Letters to the Editor: Issues of concern can be brought to light here.
Microbial Control News: Information on new discoveries, "News Releases", formation of companies, etc., pertaining to microbial control.

We also depend on our members to supply us with information for the following sections: **Obituaries, Member News** (Retirements, Awards, Promotions), **Members on the Move** (New Addresses), **Positions Available/Wanted, Meeting and Workshop Announcements,** and other **News Items.**

Send all submissions directly to the Editor. Submissions via e-mail or on computer disk (MSWORD, if possible) streamlines publication and saves on costs. Please include a hard copy with any text sent via computer disk.

Deadline for the next Newsletter is October 15, 2001.

with auditoriums, numerous conference rooms, restaurants, sports and recreational indoor facilities (swimming pool, sauna), etc. The rooms (singles and doubles) are comfortable and equipped with telephone, TV and E-mail connections. The hosting hotel is part of the Golden Tulip chain (4-star), that also hosted the venue for the 1986 SIP meeting in Veldhoven. All activities, except the barbecue, will be held in the Conference Hotel.

Meeting format. The program format will differ from the usual SIP format.The meeting will begin on Saturday evening with a mixer with a cultural flavor, and continue on Sunday, Monday, Tuesday and Wednesday with a full scientific and social program. The meeting adjourns on Thursday morning, August 30, after breakfast. This format allows the delegates to profit maximally from the cheaper airfares, which should include a Saturday night stay, and to allow them to return home before the end of the week. Symposia, workshops and contributed paper sessions will be held concurrently in three auditoria, which are easily accessible and all on the ground floor.

Scientific Program. Plenary sessions, symposia and contributed paper sessions will be held throughout the meeting. Poster sessions are tentatively scheduled for Monday and Tuesday. Divisional meetings are scheduled for Sunday and Monday evenings. There will be student paper and poster competitions with generous awards provided by the Society. Student competitors will be limited to one presentation each (either a poster or an oral presentation). The Society's business meeting is planned for Wednesday morning.

Abstract Book. The deadline for submission of abstracts, May 15, 2001, has passed. The Program Committee (Yechiel Shai, Chair) is now preparing the program, which will be made available to all SIP members before the meeting via the SIP website (www.sipweb.org). Contributed papers as oral presentations will be accommodated according to time-availability and otherwise will be re-assigned as posters. The authors will be informed about the final scheduling. A printed Program & Abstract book will be available to those registered for the meeting or to those SIP members having requested a copy by contacting the SIP Office.

Presentations. Due to the tight schedule of the meeting and the frequent problems encountered with digital presentations in other major conferences, digital projection facilities will not be in use to prevent program delay. Plenary Session and Symposia speakers are asked to leave some room for questions at the end of their presentations. Oral presentations of Contributed Paper Sessions will be limited to 12 min with another 3 min for answering questions. Because of concurrent sessions, moderators will be instructed to keep strictly to the scheduled times. Projection equipment will consist of Kodak carousel slide projectors (2" x 2") and overhead transparency projectors. Poster boards will be 1.2 m high and 1.5 m wide.

Outing. An outing will be organized on Tuesday afternoon (110 Dutch guilders); available only to those who register by August 1. We will attempt to accommodate late registrants but cannot guarantee a place. A special barbecue evening (included in the registration fee) is planned for relaxation following the outing.

Social program. The social program is not yet finalized. The outing on Tuesday invites the delegates to sample the culture near Amsterdam. The banquet will be held in the Rotunda of the Conference Hotel on Wednesday evening. The student awards, Founder's Lecture and 5K awards will be presented at the banquet.

Accompanying persons program. Depending on interest, an accompanying persons program will be organized including visits to Amsterdam, Delft, the Hague, and a flower auction. Signing up is possible only at registration.

Invitations. Those requiring invitations for obtaining visas should write to the Executive Secretary of the meeting, Mr. Rob van Haarlem (see page 5 of the registration form).

Weather in The Netherlands. The weather in the Netherlands in August averages 19 degrees Celsius on average and may vary during the day. It is advisable to bring a sweater or jacket for the cooler evenings. In August it is usually sunny, but an occasional rain shower is possible.

Latest information. More detailed information and updates about the meeting will be available at the sip web site www.sipweb.org. Should any problems arise, please do not hesitate to contact us.

Contacts for the Program
Professor Yechiel Shai, Department of Biological Chemistry, The Weizmann Institute of Science, Rehovot, 76100, Israel, FAX: +972-8-934-4112; e-mail: yechiel.shai@weizmann.ac.il

Contacts for the meeting.
Mr Rob van Haarlem, Congress Office SIP2001, Wageningen University, Generaal Foulkesweg 19, 6703 BK Wageningen, The Netherlands, Phone: +31-317-482029; FAX +31-317-485309, e-mail: rob.vanhaarlem@alg.vl.wau.nl

Key dates to remember.

Deadline for Late Registration August 1, 2001

Deadline for Cancellation August 1, 2001
(fee 150 NLG)

On behalf of the organizing committees, we look forward to seeing all of you in Noorwijkerhout at the end of August.

Meir Broza, Chairman & Just Vlak, Local Chairman

Editor's note: Pertinent information regarding the Annual Meeting is available in the Supplemnent to this Newsletter. Please bring this supplement with you so you have access to important information.

ANNOUNCEMENTS FOR NOORDWIJKERHOUT MEETINGS

Call for student paper judges
Additional individuals are needed to judge the student oral and poster presentations at the Noordwijkerhout meeting. Scientists with broad expertise are encouraged to volunteer in assisting with this difficult but very important and highly rewarding task. The current members of the Endowment and Student Awards Committee (Travis Glare, Andreas Linde, Nguya Maniania and Stephen Wraight) contribute expertise for judging papers on bacterial, fungal and protozoan pathogens of insects, however, experts on viral and nematode pathogens are critically needed to round out the judging team and ensure that each paper receives a fair and comprehensive evaluation. Regardless of your expertise, please consider lending a hand. The quality of the entire process is greatly dependent upon the diversity and number of judges.

Please contact: Stephen Wraight
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US Plant Soil & Nutr Lab
Tower Road
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Tel. (607) 255-2458
Fax. (607) 255-1132
e-mail: spw4@cornell.edu

Continuing call for applicants to receive endowed Society memberships
The Society's endowment annually supports the membership of 10-12 individuals with limited financial resources or limited access to hard currency. Endowed members may be either highly regarded invertebrate pathology professionals or serious students. In some cases, endowments may be provided for up to five years. This announcement represents a call to all of our colleagues worldwide, especially those with connections in developing nations, to submit the names of worthy individuals to receive this recognition and support.

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e-mail: spw4@cornell.edu

SIP Nominations Committee Seeks Input
SIP President, Jim Harper appointed a new Nominating Committee composed of Wendy Gelernter, Toshi Iizuka, Isabelle Thiery and Bob Granados (Chair). The role of the committee is to recommend a slate of nominees for SIP Vice-President, Secretary, Treasurer, and Trustees (2 positions) for election in 2002.

We are interested in your input on nominees for these positions. Please send your suggestions to:

Bob Granados
Boyce Thompson Institute
Cornell University
Ithaca, NY 14853 USA
e-mail: rg28@cornell.edu

FROM THE PRESIDENT

Summer is rapidly approaching here in the northern hemisphere, meaning the SIP meetings are rapidly approaching as well. By the time this reaches many of you, they will be less than two months away and deadlines for early registration and paper title submission will have passed. The local arrangements committee and programming committee are both working actively to make this a memorable meeting from all aspects. They will be updating you in other sections of this Newsletter.

I have been thinking a lot about the tremendous diversity that exists within our Society. With membership from 54 countries, we are automatically a highly diverse group. Overlay nationalities with all the standard measures of diversity, gender, religion, etc., and we become a very non-homogenous group of individuals. Then consider the wide variety of scientific interests that overlay the entire Society with our nematologists, virologists, bacteriologists, protozoologists, mycologists, and more. Add the levels of biological organization we work with within our membership, from the complexities of ecological interactions within populations and ecosystems to the intricacies of gene structure and function. Then add the dimensions of our research that span the gamut of the purely fundamental to strongly applied. Finally, consider the vast array of host organisms and pathogens we collectively investigate and you have a set of permutations and combinations that boggles the mind. With so much diversity, it is a wonder that we have enough in common to be able to talk to each other. And yet, we are a wonderfully adhesive Society. We have several overriding commonalities that glue us so strongly together that we are now in our 34th year and growing.

Among those commonalities is, of course, the desire to create new knowledge that is common to all fields of science. Beyond that, we have chosen the invertebrates, both insects and non-insects as one component of our studies and pathogens or pathogenic processes as another. We usually come into this field with an initial interest in either the hosts or the pathogens and discover the excitement of investigating the interactions between them, often with the environment included as a third major variable. Despite the obvious differences between us as individuals and in our specific interests, we have found that we can synergize each other's abilities to progress in our work through our commonalities, the collaborations and the cross-fertilization of ideas that occur as we share our discoveries, theories, and even our disappointments, through the many interactions that the Society makes possible through its Newsletter, special publications, and its annual meetings and quadrennial colloquia.

The officers of your Society, from its inception, have been dedicated to the concept of diversity – diversity in the membership, diversity in the leadership of the Society, and diversity in the subject matter that we cover under the title of Invertebrate Pathology. Over the years, we have seen specialty areas take on greater and lesser volumes of programming at our annual meetings but most have remained strong. We have generally programmed along pathogen group lines, with occasional symposia such as invertebrate immunity, microbial ecology, issues on aspects of microbial control, etc. crossing pathogen lines. The recent development of more divisions within the Society has channeled programming to some extent along pathogen group lines and this has very positive and strengthening aspects for our meetings. However, we must be careful to ensure that we do not neglect those cross-division subjects that are as much a part of the life blood of our discipline as its individual parts. As your President, I have worked and will continue to work with our programming committees, our members and our Governing Council to insure this type of diversity remains strong within our Society.

Over the years our Society has lost strength in a very critical area of our discipline, the pathology of non-insect invertebrates. I have discussed this with many members over the years, and we all agreed that we would be stronger as a Society if we could increase the number of our members with interests in this area. This year, thanks to a profit from our Guanajuato meeting, Council agreed to provide programming support to each division to bring one or more special speakers into their symposia with the stipulation that they not be members of the Society. This should enhance our programming and add new dimensions to our subject matter. In order to promote non-invertebrate pathology, I urged Meir Broza several years ago as chair of this year's Program Committee to include, if possible, a symposium in that area. He has developed a symposium on *Vibrio* that will include issues dealing with infections of coral and coral reefs, global warming, and even insects. We have no division on

non-insect invertebrates, but Council agreed to support this symposium with funding in the hope that we can begin to bring non-insect invertebrate pathology programming and expertise back into our Society and its meetings. I hope that many of you who attend our meetings this year will take the opportunity to "move outside the box" and take advantage of some of these presentations that might add a new dimension to your knowledge base. My guess is that most of you, when remembering back to general departmental seminars in your universities while you were students, will remember best those that covered a topic completely different from your own. The special symposium this year could provide just such an opportunity.

Jim Harper

FOUNDERS' HONOREE FOR 2001
DR. JAROSLAV WEISER

Dr. Jaroslav Weiser was born in Prague, Czechoslovakia in 1920 and has lived through the very dynamic periods of the Great Recession, the Second World War, the subsequent period behind the Iron Curtain, and recent access to the new Free World.

Dr. Weiser was educated as a parasitologist and, thus, aspects of parasitology were always considered in developing his studies of insect pathology. Dr. Weiser's studies were, in his words, "in the old style of university education". The Charles University in Prague was closed for five years during WWII, and subsequently the connections to the Free World were hampered by political limitations. Nevertheless, he was able to establish fruitful contacts with the founding group of classical insect pathologists, especially Edward Steinhaus.

Dr. Weiser's early interests were in tropical parasitology and, in 1948 and 1949, he actively taught and participated in field parasitology studies at the Medical School of Sarajevo Univeristy. Later, he organized the introduction of DDT for residual treatment for mosquito control and malaria eradication in Eastern Slovakia. A textbook on modern insecticides he published in 1951 was the first of its kind in Europe.

In addition to his official duties, Dr. Weiser retained his interest in diseases of insects. Beginning in 1943, he studied microsporidia in mosquitoes, midges, blackflies and other insects that are important as vectors of human diseases. In 1954, he organized the Laboratory of Insect Pathology at the Institute of Biology of the Academy of Sciences in Prague. In 1956, at the Xth Congress of Entomology in Montreal, he joined a newly formed group of insect pathologists and proposed an International Conference of Insect Pathology and Biological Control in Prague for 1958. This meeting was the first international meeting of the new scientific field of insect pathology with leading scientists from both sides of the Iron Curtain participating, and began the tradition of international meetings of insect pathologists every 4 years.

Of the newly formed insect pathology laboratories in the Eastern Block, the Prague laboratory maintained the closest contacts with insect pathologists in the West. The lab became a coordinating facility and a support for Eastern block laboratories in their efforts to conduct research. It was therefore essential to build in Prague a diagnostic service and a database with information available for all five pathogen groups. Dr. Weiser's Czech textbook "Insect Diseases" (1966), later translated into Russian, and the "Atlas of Insect Diseases" (1969 & 1977) supplied detailed morphological data on insect pathogens for users with little access to scientific libraries, journals, and services. The books also offered a review of the results of the insect pathology work of Dr. Weiser and his collaborators.

Dr. Weiser has conducted research involving all five major groups of insect pathogens. His specific interests in insect virology were entomopoxviruses and iridoviruses. The first poxvirus in chironomid midges was identified as a virus in 1948. After a

study of this C-group EPV, he discovered another poxvirus, a B- group isolate, in the wintermoth. At the time of discovery, transmission electron microscopy was not yet available and the diagnoses were only confirmed by TEM 20 years later. Dr. Weiser also discovered an entomopoxvirus from the spruce bark beetle, *Ips typographus*, in a massive outbreak of bark beetles in the Sumava Mountains. In addition to the poxviruses, his studies of the mosquito iridescent virus in *Aedes* and *Simulium* initiated further research of this group of viruses in other laboratories.

Individual strains of *Bacillus thuringiensis* were collected from the time operations began at the Charles University insect pathology laboratory and, with Jirina Vankova, Weiser produced the Czech *Bt* formulation Bathurin in 1959. Both the Lepidopteran *kurstaki* serotype and the H-14 *Bt* strain for mosquito control were produced in a newly organized production factory in 1982.

In service of a World Health Organization special program, Dr. Weiser searched for mosquito pathogens in Nigerian *Anopheles gambiae* and isolated several active strains of *Bt* including the serotype *nigeriae*. He also recovered a *Bt* strain (2362) from blackfly populations in the Kaduna River that was later produced by Abbott Labs for control of mosquitoes in several campaigns. The study provided basic information about the circulation of *Bt* strains in aquatic habitats by migrating birds and other vector organisms. Further studies of *Bt* included investigations of the effect of exotoxin on ultrastructure of intoxicated culicine mosquitoes and identification of another soluble metabolite of *Bt* H-14 that is toxic for cercariae of *Schistosoma* and their snail hosts.

Weiser and Batko studied entomophthoralean fungi and described several species that attack noctuids and flies (*Strongwellsea castrans, Tarichium*). Later, they characterized species that destroy mosquitoes during hibernation in their winter shelters, as well as species attacking tetranychid mites (*Triplosporium tetranychi*) on citrus and other orchard trees.

In 1966, Dr. Weiser produced Entomophthoraceae fungi using deep fermentation techniques. Other chytrid fungi (*Coelomycidium, Coelomomyces)* in blackflies from Europe and mosquito larvae from Central Asia were objects of a cooperative study, including the discovery of an ostracod host in the development of *Coelomomyces chironomi.* Dr. Weiser also studied deuteromycete fungi in close cooperation with Ann Samsinakova. He participated in some studies of deep fermentation production of blastospores and in studies of application of fungal propagules coated with granular mineral fertilizer. The study of *Tolypocladium* fungi with Pillai resulted in the discovery of *T. cylindrosporum* as an efficient mosquito pathogen and as a rare case of a deuteromycete fungus that infects targets not only on contact but also by peroral administration. Production of other *Tolypocladium* fungi in surface cultures on liquid media brought the discovery of efficient secondary mosquitocidal metabolites, the efrapeptin Tolypin and the cyclopeptide Cyclosporin A, further developed by Matha and Jegorov. Cyclosporin A with its immunosuppressant activity is also a very effective bioinsecticide.

In the 1950's, Weiser began studies of protozoan pathogens of insects and became interested in microsporidia in all species of hosts. The task was to discover situations where microsporidia were natural regulators of pest populations, including pests of stored products, field, forest, and orchards, as well as studies of microsporidia infecting freshwater insects and human disease vectors. Cooperative work with Ed Hazard, Jiri Vávra, and Kurtesh Purrini initiated their interest in these pathogens, and the introduction of Ed Hazard to studies of mosquito microsporidia led Carroll Smith to organize research of vector pathogens at the Gainesville laboratory of the USDA-ARS in 1963.

Cooperative investigations of polymorphic microsporidia in mosquitoes (*Amblyospora, Parathelohania)* and of microsporidia with direct infectivity for mosquitoes (*Brachiola stegomyiae, B. algerae*), together with field experience on malaria vectors, brought Weiser to join the WHO/UNDP/World Bank special program Biological Control of Vectors organized in the 1960s and 70s. He participated as a member of the steering committee and on projects in this program.

Dr. Weiser also studied the nematodes. In 1954 he isolated (concurrently with Dutky in the United States) the steinernematid pathogen most utilized today. This species, *Steinernema (Neoplectana) carpocapsae,* was isolated from the codling moth, and Dr. Weiser was able to collect additional strains infecting sawflies and the European chafer.

Continuing this research is his younger coworker Zdenìk Mrácek.

In the 1950s, Weiser organized a collection of entomophagous antagonists to the balsam wooly aphid and other forest pests in Canada. Reciprocal visits with his coworkers in laboratories of the Commonwealth Institute of Biological Control were organized.

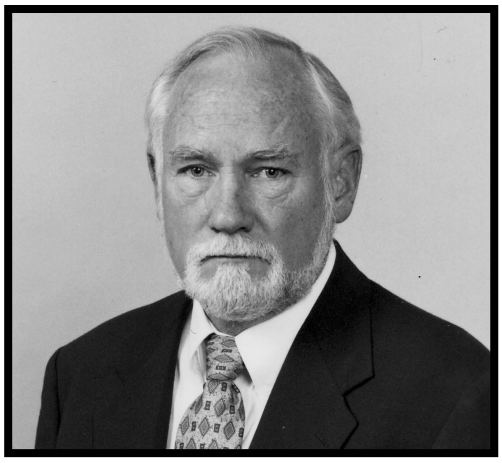
Under Farkas and Sorm, Weiser evaluated the insecticidal activities of individual chemical chains of new synthetic pyrethrins. Three new active pyrethrins resulted from this study.

With the establishment of the SIP, Weiser participated in activities and publication of the Journal. He served as the President of SIP from 1978-1980 and during his tenure initiated the yearly distribution of Abstracts of Annual Meetings to members. He considered the Abstracts a vehicle to hold the members together and keep them well informed about the trends in their scientific field. He organized a meeting of the SIP in Prague in 1978.

The journal Folia Parasitologica was founded at his request at the Academy in Prague. Insect pathology in the communist countries had one connection in the Permanent Commission of Biological Control of the COMECON which supported the individual laboratories and programs in Leningrad, Irkutsk, Kiev, Moscow and Kishinev, as well as in Sofia, Bucharest, and Poznan. He headed this Commission for many years.

Weiser was engaged in the classical aspects of insect pathology, collecting documentation including a slide collection of type materials and paraffin blocks of described material. He used ultrastructural data for his descriptions but did not enter into the disciplines of biochemistry and molecular biology. In a symbolic way, the end of his studies ends one generation of classical field research and application of insect pathology.

FOUNDERS' LECTURER FOR 2001
DR. WAYNE M. BROOKS



Dr. Wayne Brooks was born in Lynchburg, Virginia in 1939 but moved with his family to Raleigh, North Carolina in the early 1950's. As the result of his interests in collecting insects in high school, he enrolled as an entomology major at N. C. State University in 1957. During his undergraduate years he worked part-time assisting Dr. R. L. Rabb who conducted some of the first field trials with *Bacillus thuringiensis* spore preparations against the tobacco hornworm in cooperation with Dr. E. A. Steinhaus in California. Upon graduating in 1961 and with encouragement from Dr. Steinhaus, Wayne began studying hornworm diseases for his Ph.D. dissertation at the University of California at Berkeley. However, in 1963 Steinhaus offered him a position as a Junior Specialist in the Experiment Station to work on diseases of snails, slugs and other gastropods. His Ph.D. thesis was concerned with two species of tetrahymenid ciliates as parasites of slugs. Meanwhile Dr. Steinhaus left Berkeley for the University of California Irvine campus and Wayne opted to return to North Carolina upon graduating in 1966 to a faculty position in the Entomology Department at N. C. State University. There he devoted his research activities over the next 32 years to investigating protozoan, fungal and nematode pathogens of various insect pests of several agricultural crops as well as those occurring in poultry facilities.

Although primarily a pathologist who studied microsporidia and other protozoan infections in insects, he was also interested in and worked with various students and colleagues on the epizootiology of the fungus *Nomuraea rileyi* and the taxonomy and biology of a hermaphroditic nematode now placed in

the genus *Heterorhabditis*. He may be best known for his investigations and reviews on host-parasitoid-pathogen interrelationships, particularly of those involving microsporidia. In more recent years he became interested in pathogens of poultry houses and, with his students Louela Castrillo and Peter Crawford, published several papers on protozoa and the fungus *Beauveria bassiana* infecting darkling beetles. He is presently associated with the company JABB of the Carolinas, which produces *Beauveria* strains for insect control. In 1998 Dr. Brooks entered a phased-retirement program and has spent his last three years with the department in a half-time academic and administrative position from which he will fully retire in June 2001.

Wayne served as the advisor for a number of MS and Ph.D. students, several of whom are active in the Society including Randy Gaugler, James Fuxa, and Louela Castrillo. Throughout his career Wayne taught a graduate level course in insect pathology and in later years courses in biological control and immature insects. For the last 11 years he has served as the Director of Graduate Programs for the department.

He has presented numerous national and international lectures, including participation in three Latin American short courses on microbial control in Mexico and Argentina organized by Jorge Ibarra. He also had a significant role in developing a U. S. Regional Project devoted to the use of microbial control agents in IPM systems.

Wayne served several terms as a member of the editorial board of the Journal of Eukaryotic Microbiology. He has also been an associate editor of the Journal of Invertebrate Pathology since 1993.

A founding member, Wayne has played an active role in the Society for Invertebrate Pathology, serving as Secretary from 1972-1974 and as Vice President and President from 1980 - 1984. He also served on the Divisions Committee that drew up the Constitution and By-Laws, as well as a member of the organizing committee that formed the first division in the Society, the Division on Microsporidia. In addition to active roles on various other committees, Wayne has served as the Archivist for the Society since 1978. In 1993 he chaired the local arrangements committee that hosted the 26th annual meeting of the Society in Asheville, N. C. He also has been active in organizing various workshops and symposia at annual meetings of the Society. Over the years he has also been active in the affairs of the N. C. Entomological Society, serving as its Vice President and President from 1970-1972. In addition he has been a member of the Entomological Society of America, Sigma Xi, the Society of Protozoologists, and the International Organization for Biological Control.

As he approaches retirement, Wayne plans to devote more time to his favorite past time - surf fishing. For a number of years he has organized and coordinated several annual surf fishing trips to the waters of coastal North Carolina with many of his departmental colleagues as well as various society members including Joe Maddox, Jimmy Becnel, Michael McGuire, John Henry and Tok Fukuda. The latter group of pathologists was also known to always find some way to combine fishing trips with various annual meetings of the Society and other organizations, some of which proved to be more adventuresome than anticipated.

As an insect protozoologist and one of the declining numbers of so-called classical insect pathologists, Wayne is an appropriate choice to present the Founders' Lecture in honor of Dr. Jaroslav Weiser who has served our Society with distinction as a pioneer and classical insect pathologist.

NEWS ITEMS

The Entomophilic Nematode Endowment has been established to support student travel. The response from the insect-nematode community to the Endowment has been extraordinary, with pledges received across six continents. Including a $5000 grant from the Society of Nematologists, the Endowment has pledges to be contributed over five years totaling $26,425. The following individuals have generously pledged funds to the Nathan A. Cobb Foundation to establish the endowment: R. Gaugler, H. Kaya, R. Georgis, I. Glazer, R. Bedding, P. Grewal, G. Smart, D. Shapiro-Ilan, R. Giblin-Davis, M. Barbercheck, M. Klein, E. Platzer, D. Gouge, K. Smith, B. Adams, M. Shamsheldean, D. Wright, H. Choo, M. Wilson, S. Alm, P. Stock, E. Lewis, N. Ishibashi, P. Mandanas, L. LeBeck, I. Brown, and A. France. Industry contributors include BioLogic, EcoSMART Technologies, E-Nema, Integrated BioControl Systems, M&R Durango,

Microbio, SDS Biotech, and Thermo Trilogy. To each, a sincere 'Thank You.'

It is anticipated that the endowment will generate sufficient investment return to permit awards to students within two years. Application guidelines for awards will then be posted in the Newsletter. Awards will be based on merit and decided by the Nathan A. Cobb Foundation Board. Those wishing to contribute to the Endowment are encouraged to write for more information to *gaugler@rci.rutgers.edu*.

MICROBIAL CONTROL NEWS

Thermo Trilogy Aquistion by Mitsui Corporation
On Monday, April 30, Mitsui Corp. purchased the assets of Thermo Trilogy Corp. to form a new company, Certis USA, LLC. The Thermo Trilogy product line, facility locations, and personnel have not changed significantly and, in fact, will likely be expanded through some other Mitsui acquisitions in Europe and elsewhere. More information is available from our new web site (www.certisusa.com).

My address, telephone and fax numbers, and job responsibilities have not changed, but my e-mail address has. Mail will be forwarded from my old address (mdimock@thermotrilogy.com) for a few weeks, but please begin to use the address listed below and update your contact files accordingly.

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The Biocontrol Network: a new Canadian initiative in plant protection against pests and diseases.
The Biocontrol Network is a new Canadian research network aimed at reducing the use of pesticides in agriculture and forestry by replacing them with treatments based on the natural enemies of insect pests and disease pathogens. The immediate focus of the Network's effort is on greenhouses and tree nurseries. The Canadian greenhouse industry, worth over $1 billion in 1999, is one of Canada's fastest growing agronomic industries. Tree nurseries, a major economic sector of Canada's forest industry which is worth over $40 billion annually, underpin Canadian reforestation programs. These 'contained' ecosystems are both afflicted by pests and disease, still requiring the use of chemical pesticides which are toxic to human health and the environment. The Biocontrol Network's approach of the pesticide problem is to use biocontrol agents (other insects or invertebrates, bacteria, fungi and viruses) in coordinated, synergistic ways to control insects and diseases, allowing greenhouse and tree nursery growers to progressively eliminate harmful chemical pesticides and still maintain protection of their crops.

Headquartered at the Université de Montréal, this research network on biologically based pest management and control is led by Dr. Raynald Laprade and Dr. Jean-Louis Schwartz, two experts in research on *Bacillus thuringiensis*. The Biocontrol Network brings together 42 life scientists (among them are 16 members of the SIP, including the two Network Leaders) from 15 universities and 7 government research agencies located in 7 provinces of Canada. The Network will be supported by a substantial grant from the Natural Sciences and Engineering Research Council, the largest granting agency of the Canadian government.

In the next five years, the Biocontrol Network will train 80 students and postdoctoral fellows in a highly multidisciplinary environment where research spans the range of biocontrol areas, from broad ecological approaches to the use of individual microbes, fungi and small invertebrates as biological control agents harmless to humans and the environment, and from the function of individual cells in insects and plants to the design of pest management programs. It is expected that the synergies created by the Network will produce young scientists dedicated to the development of commercially viable, environmentally safe and socially acceptable biological pesticides, aware of industry's requirements, and capable of managing such technology-intensive businesses.

The Biocontrol Network has established strong links with Canadian growers, pest control product manufacturers and other stakeholders, including regulatory agencies, environmental protection and

consumer groups. It will focus on the pests and diseases of major current concern to growers and, at the same time, explore innovative approaches to pave the way to integrated pest management strategies for the future. This unique, coordinated research and development effort will make the Biocontrol Network a leader in crop and natural resource protection. It will also help its commercial partners, the growers and the biocontrol agent producers, to get a competitive edge on the international scene.

The Biocontrol Network's current focus on greenhouses and tree nurseries is therefore a natural step out of the laboratory and a prelude to the larger environment in which over $8 billion worldwide is spent annually on pesticides. We hope that the lessons gained on the synergisms of biocontrol agents at this contained, more managed level will provide valued 'models' for the open systems of farming, forestry and the environment generally. *Jean-Louis Schwartz and Raynald Laprade, biocontr@physio.umontreal.ca*

News from IPMnet (Integrated Pest Management Network), IPMnet@bcc.orst.edu

A preliminary field survey in Malaysia revealed extensive infection of *Plutella xylostella* (diamondback moth) by microsporidia, probably *Vairimorpha imperfecta*, with many dead larvae found to be heavily infected with microsporidia spores.
I.A. Ghani, IdrisGh@ukm.my

Reexamination of Pest Resistance Management Models Advised

Biotechnology applications to agriculture, if properly integrated into production systems, offer more sustainable and ecologically friendly tools for increasing productivity. Insertion of a gene from *Bacillus thuringiensis* that produces a protein toxic to certain insect pests is one such application. Within the *Bt* organism alone there are over 50 genes with known insecticidal properties. Several of these genes could be deployed simultaneously (if the modes of action are different) to increase crop protection levels and reduce the likelihood that insect populations will become resistant to the Bt toxin.

Because *Bt* toxins are highly specific to target insects, *Bt* crops, if deployed cautiously, offer ecological benefits over conventional broad-spectrum insecticides such as the pyrethroids. However, the long-term impact of *Bt* crops can only be sustained if effective deployment strategies are adopted that hinder the evolution of insects resistant to *Bt* toxin. Such deployment strategies must be sustainable and remain viable in the event that insect resistance develops. A high dose approach (high gene expression) used in combination with structured refuge areas is the most widely adopted strategy to manage insect resistance, but it requires frequent monitoring for detection of possible insect resistance.

Most strategies for delaying pest resistance are based on theoretical models which assume that the genes conferring resistance are rare. However, work carried out by a team of scientists headed by Bruce Tabashnik at the University of Arizona suggests that this and other assumptions of resistance management models have to be reexamined. The team collected pink bollworm larvae (Pectinophora gossypiella) from 300 to 2,000 cotton bolls from 10 cotton fields in Arizona in 1997 and 1998, and from 13 cotton fields in 1999. They found that the frequency of the resistance allele in PBW was not rare, but surprisingly high in 1997; however, the frequency of resistance did not increase from 1997 to 1999 and the *Bt* cotton remained extremely effective against PBW throughout the examination period.

Two independent methods, a direct and an indirect approach, were used to estimate the frequency of resistance to *Bt* cotton in field-derived populations of PBW. The direct approach was based on laboratory bioassays of field-derived strains of larvae for susceptibility to Cry1Ac toxin; the indirect approach calculated the relative abundance of live PBWs in field-collected bolls of *Bt* and non-*Bt* cotton. With three exceptions, PBW larvae were too scarce in *Bt* cotton fields to obtain the required numbers to initiate strains. Consequently, at least 100 individuals were collected from non-*Bt* cotton fields directly adjacent to *Bt* cotton fields, and forty-one, nine, and 24 individuals were collected from three *Bt* cotton fields to initiate field-derived strains for analysis. The larvae were reared on wheat germ diet without Cry1Ac, except when the larvae were tested for susceptibility to Cry1Ac in laboratory bioassays.

One or more generations of each field-derived strain

were bioassayed on wheat germ diet containing either 0 (control), 3.2, or 10 µg of Cry1Ac per ml of diet to determine their susceptibility. After 21 days, live fourth instar larvae and pupae were scored as survivors. These survivors were then pooled and selected with Cry1Ac over seven generations to create the resistant strain, which ultimately survived 100 µg of Cry1Ac per ml of diet in the final (third) selection.

Using reciprocal crosses between resistant and susceptible strains, the researchers inferred that survivors from 10 field-derived strains from 1997 were homozygous for an autosomal recessive resistance allele with an allele frequency of 0.16. Though all the 10 strains derived from 1997 had survivors at 10 µg Cry1Ac, only one Arizona strain showed survival at that level in 1998, with an estimated resistance allele frequency of 0.0070. Likewise, in 1999, none of the neonates from 13 strains (over 6,799 individuals) survived exposure to 10 µg of Cry1Ac per ml of diet, a result which yielded an estimated resistant allele frequency of 0. Indirect estimates, based on relative abundance of PBW larvae in *Bt* and non-*Bt* cotton bolls, also confirmed that the resistance allele frequency, calculated at 0.13 for 1997, 0.050 for 1998, and 0.11 for 1999, did not increase from 1997 to 1999. These results overlap with the direct estimates for 1997 and 1998, indicating agreement for the two approaches.

The results of the experiments revealed that resistant PBW larvae capable of surviving on *Bt* cotton were not rare in some Arizona cotton fields in 1997. The estimates of mean resistance allele frequency for 1997 were almost 100 times higher than resistance genes for other lepidopteran pests that attack *Bt* crops. However, examination of 140,950 bolls of *Bt* cotton and non-*Bt* cotton showed that *Bt* cotton remained effective against lepidopteran pests, contrary to models that predicted an increase in resistance allele frequency. The authors suggested factors that could contribute to the delay of resistant PBW evolution in the field, including the existence of refuges, a reduced rate of development of larvae in *Bt* cotton fields, and fitness costs associated with resistance.

Source: Tabashnik BE, Patin AL, Dennehy TJ, Liu Y-B, Carriere Y, Sims MA, and Antilla L. 2000. Frequency of resistance to *Bacillus thuringiensis* in field populations of pink bollworm. Proc. Natl Acad Sci 97: 12980-12984.

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Fate and Effects of the Insecticidal Toxins from *Bacillus thuringiensis* in Soil

The incorporation into plants of genes from *Bacillus thuringiensis* (*Bt*) that code for the production of insecticidal toxins (Cry proteins) reduces many problems associated with the use of chemical pesticides, as the toxins are produced continuously within these plants. Impressive control of *Bt*-susceptible insect pests has been obtained with such plants in the laboratory and in the field. However, there is concern that genetically engineered crops may pose risks to natural and agricultural ecosystems.(1) If production exceeds consumption and inactivation by insect larvae, degradation by the microbiota, and abiotic inactivation, the toxins could accumulate in the environment to concentrations that may: 1) constitute a hazard to nontarget organisms, such as the soil microbiota, beneficial insects (e.g., pollinators, predators, and parasites of insect pests), and other animal classes; 2) result in the selection and enrichment of toxin-resistant target insects; and 3) enhance the control of target insects. Accumulation is enhanced when the toxins are bound on surface-active particles in the environment (e.g., clays and humic substances) and, thereby, are rendered less accessible for microbial degradation but still retain their toxic activity.

The toxins produced by *B. thuringiensis* subsp. *kurstaki* (Btk; 66 kDa) and subsp. *tenebrionis* (Btt; 68kDa) adsorbed rapidly (in <30 min, the shortest time studied) on mined clay minerals [montmorillonite (M) and kaolinite (K)], on the clay-size fraction of soil, on humic acids, and on clay-humic acid complexes.(1,2) Only about 10 and 30% of the toxin from *Btk* or *Btt*, respectively, adsorbed at equilibrium, was desorbed by one or two washes with water, and additional washing desorbed no more toxins, indicating that the toxins were tightly bound on the clays. Interaction of the toxins with the clays did not alter significantly the structure of the toxins, as indicated by ELISA examination of the equilibrium supernatants and desorption washes and by Fourier-transform infrared analyses and insect

bioassays of the bound toxins. The toxins only partially intercalated M, as determined by X-ray diffraction analyses, and there was no intercalation of K, a nonexpanding clay mineral.

The toxin from *Btk* or *Btt* bound on M, K, or the clay-size fraction was larvicidal to the tobacco hornworm (*Manduca sexta*) or the Colorado potato beetle (*Leptinotarsa decemlineata*), respectively. When free toxin from *Btk* was added to nonsterile soils, larvicidal activity was detected after 234 days, the longest time evaluated.(2) The binding of the toxins from *Btk* and *Btt* on clays reduced their availability to microbes, which is probably responsible for their persistence in soil.

The free toxins were readily utilized, both in vitro and in soil, as sources of carbon and/or nitrogen by pure and mixed cultures of microbes, including soil suspensions, whereas the bound toxins were not utilized as a source of carbon, and utilized slightly as a source of nitrogen, but they did not support growth in the absence of exogenous sources of both available carbon and nitrogen. The toxins, free or bound, had no effect on the growth in vitro of a spectrum of bacteria (both gram-positive and gram-negative), fungi (both yeast and filamentous forms), and algae (primarily green and diatoms).(1)

The toxin was released in root exudates from *Bt* corn (NK4640Bt) grown in sterile hydroponic culture and in sterile and nonsterile soil in a plant-growth room.(3,4) Bt corn is maize (*Zea mays*) that has been genetically modified to express the cry1Ab gene from *B. thuringiensis* to kill lepidopteran pests, especially the European corn borer (*Ostrinia nubilalis*). The presence of the toxin was indicated by a major band migrating on SDS-PAGE to a position corresponding to a molecular mass (M sub r) of 66 kDa, the same as that of the Cry1Ab protein, and was confirmed by immunological and larvicidal assays. After 25 days, when the hydroponic culture was no longer sterile, the band at 66 kDa was not detected (there were several new protein bands of smaller M sub r) and the immunological and larvicidal assays were negative, indicating that microbial proteases had hydrolyzed the toxin. By contrast, the toxin was detected after 25 days in both sterile and nonsterile soil, indicating that the released toxin was bound on surface-active particles in rhizosphere soil, which protected the toxin from hydrolysis, similar to results observed with purified toxins.

To estimate the importance of the clay mineralogy and other physicochemical characteristics, which influence the activity and ecology of microbes in soil, on the persistence of the toxin released in root exudates from *Bt* corn, studies were done in a sandy loam soil amended with various concentrations (3-12%) of M or K in a plant-growth room. Rhizosphere soil from plants of *Bt* corn were positive 10-40 days after germination for the presence of the toxin when assayed immunologically with Lateral Flow Quickstix.(4)

No toxin was detected in any soil with plants of non-*Bt* corn or without plants. All samples of soil in which *Bt* corn was grown were toxic to the larvae of *M. sexta*, with mortality ranging from 25-100% on day 10 and increasing to 88-100% on day 40, whereas there was no mortality with any soil from non-Bt plants and with soil without plants. In addition, the size and weight of surviving larvae exposed to soils from *Bt* corn were significantly lower (ca. 50-92% lower) than those exposed to soil from non-Bt corn or to soil without plants.

The larvicidal activity was generally higher in soil amended with M than with K, probably because M, a swelling 2:1, Si:Al, clay mineral with a significantly higher cation-exchange capacity and specific surface area than K, a nonswelling 1:1, Si:Al, clay, bound more toxin in the root exudates than did K, as has been observed with pure toxin. Nevertheless, mortality in the M and K soils was essentially the same after 40 days, indicating that over a longer time, the persistence of larvicidal activity is independent of the clay mineralogy and other physicochemical characteristics of the soils. The increase in larvicidal activity between 10 and 40 days indicated that the toxin in the root exudates was concentrated when adsorbed on surface-active components of the soils.

The toxin was also released in root exudates of field-grown *Bt* corn plants, and it remained larvicidal for months after their death and subsequent frost.(4) Although the larval mortality in rhizosphere soil from plants of field-grown *Bt* corn ranged from 38-100% and the coefficients of variation were large, the size and weight of the surviving larvae were reduced by 40-50% when compared with soil from non-Bt corn or from soil without plants.

To determine whether the release of the Cry1Ab

protein is a common phenomenon with transgenic Bt corn, the release of the Cry1Ab protein in the exudates of 13 *Bt* corn hybrids, representing three different transformation events (*Bt*11, MON810, and 176), and of their isogenic nontransgenic counterparts was studied. All samples of rhizosphere soil from the 13 hybrids, whether grown in the plant-growth room for 40 days or in the field (harvested after the production of ears of corn), were positive for the presence of the toxin when assayed immunologically, and all samples were toxic to the larvae of *M. sexta*, with mortality ranging from 38-100%. No toxin was detected immunologically or by larvicidal assay in any soil in which plants of non-*Bt* corn or no plants had been grown. In addition, the weight of surviving larvae exposed to soils from *Bt* corn was significantly lower (80-90%) than those exposed to soils from non-*Bt* corn or without plants.

These results indicated that the release of the toxin in exudates from roots of *Bt* corn is a common phenomenon and that the released toxin could accumulate in soil and retain insecticidal activity, especially when the toxin is bound on surface-active soil particles and, thus, becomes resistant to degradation by microorganisms. Although some toxin was probably released from sloughed and damaged root cells, the major portion was derived from exudates, as there was no discernable root debris after centrifugation of the Hoagland's solution when plants were grown for 25 days in hydroponic culture.

In addition to the large amount of toxin that will be introduced to soil in plant biomass after harvest and some that will be introduced in pollen released during tasseling, these results indicated that the toxin will also be released to soil from roots during the entire growth of a *Bt* corn crop. The presence of the toxin in soil could improve the control of insect pests, or the persistence of the toxin in soil could enhance the selection of toxin-resistant target insects and constitute a hazard to nontarget organisms, as receptors for the toxins are present in both target and nontarget insects. Consequently, nontarget insects and organisms in higher, and perhaps also in lower trophic levels, could be susceptible to the toxins.
To determine the effects of the Cry1Ab toxin released in root exudates and from biomass of Bt corn on various organisms in soil, 20 medium-size earthworms (*Lumbricus terrestris*) were introduced into soil planted with *Bt* or non-*Bt* corn or amended with 1% biomass of *Bt* or non-*Bt* corn and soil not planted or amended. After incubation, the numbers of earthworms were counted and their weight determined. Representative worms were dissected, and soil from the guts, as well as from the casts, was analyzed for the presence of the Cry1Ab protein by immunological and larvicidal assays.(5)

There were no significant differences in the percent mortality and weight of earthworms after 40 days in soil planted with *Bt* or non-*Bt* corn or not planted or after 45 days in soil amended with biomass of *Bt* or non-*Bt* corn or not amended. However, the toxin was present in both the casts and guts of worms in soil planted with *Bt* corn or amended with biomass of *Bt* corn, whereas it was absent in casts and guts of worms in soil planted with non-*Bt* corn or not planted and in soil amended with biomass of non-*Bt* corn or not amended. When worms from soil with *Bt* corn or amended with biomass of *Bt* corn were transferred to fresh soil, the toxin was cleared from the guts in one to two days.

All samples of soil amended with biomass of *Bt* corn and from the rhizosphere of *Bt* corn were positive for the presence of the toxin and were lethal to the larvae of M. sexta after 45 and 40 days, respectively, whereas there was no mortality in soil amended with biomass of non-*Bt* corn, in rhizosphere soil of non-*Bt* corn, or in soil with no plants or not amended, which were also negative in the immunological assays. There were no statistically significant differences ($P>0.5$) in the total numbers of nematodes and culturable protozoa, bacteria (including actinomycetes), and fungi between rhizosphere soil of *Bt* and non-*Bt* corn or between soils amended with *Bt* or non-*Bt* biomass.

These results suggest that despite its persistence in soil, the toxin released in root exudates of *Bt* corn or from the degradation of the biomass of *Bt* corn is not toxic to a variety of organisms in soil. The toxin was detected in the guts and casts of earthworms grown with *Bt* corn and in soil amended with biomass of *Bt* corn, indicating again that the released toxin bound on surface-active particles in soil, which protected the toxin from biodegradation, similar to what has been observed with purified toxins. Because only one species of earthworms and only total culturable microorganisms and nematodes were evaluated, more detailed studies, including studies using techniques of molecular biology, on the composition and diversity of these groups of

organisms are necessary to confirm the absence of effects of the Cry1Ab toxin on biodiversity in soil.

Sources

1. Stotzky G. 2000. Persistence and biological activity in soil of insecticidal proteins from *Bacillus thuringiensis* and of bacterial DNA bound on clays and humic acids. J. Environ. Quality 29: 691-705.

2. Tapp H and Stotzky G. 1998. Persistence of the insecticidal toxin from *Bacillus thuringiensis* subsp. *kurstaki* in soil. Soil Biol. & Biochem. 30: 471-476.

3. Saxena D, Flores S, and Stotzky G. 1999. Insecticidal toxin in root exudates from *Bt* corn. Nature 402: 480.

4. Saxena D and Stotzky G. 2000. Insecticidal toxin from *Bacillus thuringiensis* is released from roots of transgenic *Bt* corn in vitro and in situ. FEMS Microbiol. Ecol. 33: 35-39.

5. Saxena D and Stotzky G. 2001. *Bacillus thuringiensis* (*Bt*) toxin released from root exudates and biomass of *Bt* corn has no apparent effect on earthworms, nematodes, protozoa, bacteria, and fungi in soil. Soil Biol. & Biochem. (in press).

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The previous 2 articles were extracted from the ISB News Report - May 2001, Information Systems for Biotechnology: isb@gophisb.biochem.vt.edu

MEMBER NEWS

Karl Maramorosch, ESA Honorary Member and emeritus professor of entomology at Rutgers-the State University of New Jersey, has been honored by the Board of Directors of the Society for In Vitro Biology by conferring on him the Distinguished Lifetime Achievement Award. This award was presented for his exemplary research achievements and contributions to the field of insect cell culture. The award citation stated that Karl's involvement and dedication to the field of cell culture has impacted the careers of many students, young scientists and colleagues. The award was presented to Dr. Maramorosch at the Plenary Session of the 2001 Congress on In Vitro Biology on June 17 at the Royal Riverfront Hotel in St. Louis, MO, where a reception in his honor was also held on June 19. Colleagues who nominated Karl for this distinguished award prepared a poster presentation highlighting his achievements.
-From the Rutgers Department of Entomology

Moving?

Please prepare a paragraph including information about past and present postings, new address, telephone, fax, and e-mail, and send to your Newsletter Editor for inclusion in the "Members on the Move" section in the next issue. Editor's address is on page 2 of the Newsletter.

Also, please inform the SIP Office (address on page 2) of your new address.

MEMBERS ON THE MOVE

Michael J. Bidochka recently accepted a position in the Dept. of Biological Sciences at Brock University in St. Catharines, ON, Canada. Previously, he was at Trent University. The move unites him with his wife (Fiona Hunter, a blackfly ecologist who is also a member of the Biology Dept.) and their two children, Maia and Emily. Mike will continue working on the molecular biology and population genetics of insect pathogenic fungi. He also hopes to contribute to applied aspects of insect control since Brock University also hosts CCEOVI (Cool Climate Oenology and Viticulture Institute) and there is a healthy greenhouse industry in the area. He is interested in new graduate students or post-doctoral applicants. Contact Mike at:
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Phone: 905-688-5550 ext. 3392
Fax: 905-688-1855
e-mail: bidochka@spartan.ac.brocku.ca

Dr. Susan Bjornson will be moving in June. Her new address is:

Dr. Susan Bjornson
c/o Dr. Doug Strongman
Biology Department
Saint Mary's University
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B3H C3C

Roberto M. Pereira writes "Got to a fork on the road and decided to go South! I am back "home" in Gainesville, FL". I am now at the USDA lab [Research Entomologist] in Gainesville. If you happen to be around, please come in for a visit.
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S. Patricia Stock has accepted a new position at the University of Arizona, Tuscon beginning July 1, 2001 as Assistant Research Professor in the Plant Pathology Department. Patricia's area of expertise encompasses systematics, biology and ecology of nematodes. Her current interests are: 1) Nematode systematics: relationships between morphological and molecular evolution, 2) Biodiversity of entomopathogenic and insect-associated nematodes, 3) Host-parasite interactions, 4) Biological control of insects 5) Biology and ecology of nematodes from desert ecosystems. Her emphasis is a multidisciplinary approach maintaining an active collaboration in the areas of entomology, plant pathology and molecular systematics. Patricia can be contacted at:
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H. Alan Wood, after 33 years of plant, fungal and insect research at the Boyce Thompson Institute, has accepted an offer to become the Director of the new Life Sciences and Biotechnology Institute at Mississippi State University. The Institute will be a trans-university activity charged with providing leadership and core facilities for research efforts throughout the university. His new address is:
Life Sciences and Biotechnology Institute
P.O. Box 6040
Mississippi State University
Mississippi St., MS 39762
e-mail: hawood@mafes.msstate.edu

Dudley Pinnock has a new e-mail address:
dpinnock@bigpond.com

POSITIONS AVAILABLE

Postdoctoral position in microbial ecology located at AgResearch, New Zealand – starting date July 2001. A postdoctoral position funded by the New Zealand Marsden Fund is available to examine the relationship between scarabaeid beetles and their microbial symbionts. The Fellowship is part of a study to elucidate the microbial ecology of the scarab gut and reproductive tract, identify symbionts involved in digestion and pheromone production and determine pathways for intergenerational transfer. The successful applicant will work as part of the

AgResearch Microbial Control team at Lincoln, New Zealand where the research project forms part of a wider programme of microbial ecology and biological control. Applicants must have a PhD with experience in microbiology including molecular methods for identification of specific organisms. Entomological skills would also be an advantage. Salary is NZ$45,000 p.a.

For further information contact Dr T.A. Jackson, AgResearch, PO Box 60, Lincoln, New Zealand. Applications close 30 May 2001. Applicants should send their curriculum vitae, together with the names addresses and email addresses of 3 referees, either by e-mail or hard copy to Dr Jackson (trevor.jackson@agresearch.co.nz) at AgResearch (http://www.agresearch.co.nz)

Extension Aquatic Animal Health Specialist - Sea Grant Extension Associate IV - A06. The State of New York has established a Marine Disease and Pathology Consortium at the State University of New York at Stony Brook's Marine Sciences Research Center (MSRC) for the purpose of performing research and outreach on marine diseases and pathology. The Laboratory will be jointly staffed by the Marine Sciences Research Center, SUNY Stony Brook; the College of Veterinary Medicine, Cornell University; and New York State Sea Grant. This position is for a New York Sea Grant Extension Specialist who will be located at the Marine Sciences Research Center, SUNY Stony Brook. He/she will be responsible for developing and implementing an outreach program focussing on establishing and maintaining effective communications between the Laboratory at Stony Brook, the fishing community, and government agencies. The specialist will also coordinate efforts with the Aquatic Animal Health Program located at the College of Veterinary Medicine, Cornell University.

The position requires at least a masters degree and substantial knowledge and experience with matters of aquatic animal health. The ideal candidate will have expertise in diseases of marine invertebrates. At least five years of experience is required after receipt of the MS degree or two years after the Ph.D. Experience in Sea Grant extension or the equivalent is desirable. Desired professional experience would include disease diagnosis, conduct of field investigations of disease outbreaks in wild populations and/or in the mariculture environment. This position requires excellent communication skills with interested parties ranging from academics, fishermen, and government officials. It is expected that this position occasionally will involve some laboratory work as well as joining lobster fishers at work.

Review of applications will begin June 1, 2001, but applications will be accepted until the position is filled. Applicants should send statement of interests, CV, names of three references, and official college transcripts to:

Nancy Greenawalt, New York Sea Grant Extension Program, 340 Roberts Hall, Cornell University, Ithaca, New York 14853-5905, Telephone 607-255-2832, Fax 607-255-2812, e-mail nag3@cornell.edu Fax 607-255-2812. For more information about New York Sea Grant visit its web page at: "http://www.nyseagrant.org" Cornell University is an equal opportunity/affirmative action educator and employer.

Graduate Students. McGill University, Montreal, Canada: We are determining the responses of the larvae of the greater wax moth, *Galleria mellonella* to micro-organisms. The main thrust is the identification of the effects of the plasma protein, apolipophorin-III on the responses of the hemocytes to the bacteria *Xenorhabdus nematophilus* and *Bacillus subtilis*. The objective is to increase the effectiveness of the bacterial-nematode complex, Xenorhabdus-Steirnernema as a microbial insecticide. Dedicated and reliable graduate students are being sought for two projects.

1. The candidate will identify enzymes discharged from hemocytes in response to bacterial antigens. The influence of apolipophorin-III on these activities will be determined.
2. The candidate will establish the influence of bacterial antigens and apolipophorin-III on signal transduction in hemocytes.

Candidates must have an interest in physiology, cell biology and biochemistry. Experience with insects or bacteria is not essential but useful. Two letters of reference are required. Contact information for applicants: Gary B. Dunphy, Dept Of Natural Resource Sciences, Macdonald Campus of McGill University, 21,111 Lakeshore Road, Ste. Anne de Bellevue, Quebec, Canada. H9X1C0, e-mail: dunphy@nrs.mcgill.ca

POSITIONS WANTED

Postdoc or research associate: Self-motivated, hardworking PhD seeks Postdoc or research associate position in the UK, North America or Australia/New Zealand in the following areas: Biological Control, Integrated Pest Management, Insect Pathology or Agricultural Entomology. My PhD research (to be submitted May 2001) has concentrated on the study of the ecology and physiology of the aphid pathogenic fungus *Erynia neoaphidis*. More specifically, this has included:

- Effects of biotic and abiotic factors on the transmission of *E .neoaphidis* through pea aphid populations in the laboratory and the field.
- Use of *E. neoaphidis* within IPM programs.
- Quantification of sporulation using novel image analysis methods.
- Investigation into the overwintering physiology of *E. neoaphidis*.
- Mass production of *E. neoaphidis* in liquid culture.

As well as these specific fields, I also have experience in bioassay development, fungal mass production, formulation development, field trials, insect rearing, and population dynamics studies. I also have excellent communication and presentation skills and have presented data to a number of specialist and non-specialist audiences. Webpage: www. geoacities,com/CapeCanaveral/ Hall/5065
Contact: **Tony Bonner**, tony_bonner@hotmail.com

Consulting: I am looking for short term or long term contract work. I am a private consultant who specializes in the registration of biological and chemical products with the US EPA and individual state agencies. I have experience in the public (USDA-ARS) and private sector working with biological and hard chemical products as a molecular biologist and microbiologist. I have also worked with clients to submit packages for EUPís and full registration to the US EPA. I am also available to write white papers and conduct research related to international and domestic registration. To learn more about me and my services, please feel free to visit my website at: "http://www.shbscientific.com"
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(480) 940-1745 Phone; (480) 699-6094 Fax
email: shbscientific@yahoo.com

Research associate or PhD assistantship: Self-motivated, hardworking Ms holder seeks Research Associate or PhD assistantship position in North America. MS degree in Entomology and Applied statistics from Louisiana State University, and MS from Beijing Agricultural University. Experience in experimental design, data collection and statistical analysis, biological modelling, pathogen bioassay (especially with insect viruses), interaction between pathogens, host insects and host plants, viral mass production, formulation development, field trials, insect rearing, and risk assessment. **Fenggang Peng**, e-mail: fenggangpeng@hotmail.com

Postdoc or research associate: PhD (Sept., 2001) seeks Post doc or Research Associate position in the following areas: Microbial Control, Insect Pathology, Biological Control, Integrated Pest Management. PhD studies included evaluation on the pathogenicty of a microsporidian (*Nosema* sp.), insecticide bioassay, quantitative and qualitative assessment of carboxylesterases in different populations of *Spodoptera litura*. Experience: Junior Research Fellow & Senior Research Fellow studying “Gregarines as Biocontrol agent of Grasshoppers". Has thorough knowledge in identification (taxonomy), mass production, laboratory and field application of cephaline gregarines against grasshoppers. Languages spoken and written: English & Tamil**.** Countries preferred: Any**.** Please contact: **S. Johny**, G.S. Gill Research Institute, Guru Nanak College, Chennai - 600 042, INDIA**,** Phone: (044) 244 0827, Telefax: 091-044-244 46 21 Email: johny_shajahan@hotmail.com, grignc@giasmd01.vsnl.net.in

Graduate Research Assistantship Position. I have completed an M.Sc. in Nematology in September 2000 from the University of Ghent, Belgium. I did my thesis on "Evaluation of Resistance of Potato Varieties to Globodera pallida and Influence of their Root Diffusate on Hatching". I would like to further my research work in the applied field of Nematology - identification of nematodes of local population, methods of management by sustainable agricultural practices, culture of nematodes, etc. I prefer to work on cyst nematodes (Potato cyst nematodes and Soybean cyst nematodes) and Meloidogyne species. I am very interested to pursue my Ph.D in Nematology through working in above mentioned areas.
Sahira Shakya, e-mail: shakya_np@yahoo.com

Future SIP Meetings

SIP 2001 !!!
34th Annual Meeting
Leeuwenhorst Conference Hotel in Noordwijkerhout, The Netherlands
August 25th-30th, 2001

SIP 2002
Iguassu Falls, Brazil
August 18-23, 2002

SIP 2003
Burlington, Vermont; August

SIP 2004
Open, probably Europe; late August

SIP 2005
Open, probably USA

SIP 2006
Open

Proposals for hosting future meetings are welcomed. Please contact Mark Goettel, Chair of the Meetings Site Selection Committee. e-mail: goettel@em.agr.ca

FUTURE MEETINGS AND WORKSHOPS

National Congress of Biotechnology and Bioengineering / National Congress of Biochemical Engineering / International Congress of Biochemical Engineering
10-14 September 2001, Hotel Continental Plaza, Veracruz, Ver. México

Organized by: The Mexican Society of Biotechnology and Bioengineering (SMBB)
National School of Biological Sciences
Mexican College of Biochemical Engineers

Information: www.smbb.org

Organization: Dr. Gustavo Gutiérrez ENCB-IPN, Apartado Postal 62482 O6470, Mexico DF, FAX + (52) 57296000 ext 62359, e-mail: gustavog@prodigy.net.mx

Scientific Program: Dr. Mariano García, UAM-I Av La Purísima s/n, Col. Vicentina
09340, Mexico, DF., FAX +(52) 58044712
e-mail: smbb@xanum.uam.mx
Dra. Gloria Dávila, ENCB-IPN, Apartado Postal 62482, O6470, México DF, FAX + (52) 57296000 ext 62359, e-mail: cibq@bios.encb.ipn.mx

Hotel and Transportation:
Turismo y Convenciones, Providencia 961 Col del Valle, Mexico, DF, Tel +(52) 55 233151, Fax: + (52) 55 362446, www.turycon.com.mx
reservaciones@turycon.com.mx

Society of Environmental Toxicology and Chemistry, 22nd Annual Meeting: "Changing Environmental Awareness: Societal Concerns and Scientific Responses"
11-15 November, 2001
Baltimore Convention Center
Baltimore, Maryland

Further Information:
SETAC, 1010 North 12th Avenue, Pensacola, Florida 32501-3367, Tel: (850) 469 9778, www.setac.org

A Centennial Symposium Commemorating Ishiwata's Discovery of *Bacillus thuringiensis*
Kurume, Japan, November 1-3, 2001
For further information please visit our homepage at the following address.
http://bfri.fitc.pref.fukuoka.jp/bt100/index.html
[See Feb. 2001, Vol. 34 (1) for details.]

PAST MEETINGS

The Southern Regional Project S-301, "Development, evaluation and safety of entomopathogens for control of arthropod pests" held its annual meeting February 25-26, 2001 at the Hallmark Inn, Davis, CA. More than 50 members attended the meeting organized by Dr. Harry Kaya. The current project involves insect pathologists, entomologists, microbiologists, molecular biologists, biochemists, geneticists, bacteriologists, mycologists, nematologists and vector biologists

from 21 State Agricultural Experiment Stations, 12 USDA/ARS laboratories and 2 USDA/FS laboratories throughout the U.S. and Puerto Rico. Participation also includes scientists from commercial industries involved in agricultural biotechnology and biological control. Additional details on the meeting, participants and the project can be accessed at http://cipmtest.ent.ncsu.edu/s301/. The 2002 annual meeting will be held in Raleigh, NC, February 24-25.

Editor's note: See photos of SIP members at the S-301 meeting on page 28.

British Mycological Society, Swansea
'Bioactive fungal metabolites - impact and exploitation' University of Wales, Swansea,
22/4/2001 - 29/4/2001

British Mycological Society meetings are normally specialised meetings for British fungus -fanatics, but the topic of the Swansea meeting clearly caught the imagination of a lot of people, and there were 260 participants from 45 countries. As there were no concurrent sessions, it was easy to get an overview on all that was going on. It was an especially interesting meeting because participants came from such varied back-grounds - food safety, regulators, producers, toxicologists, chemists, mycologists, with a fair number of insect pathologists. For insect pathologists the main points of interest were: what do mycotoxins do to insects, and are they going to cause a problem with registration?

I suppose many people are like me and always vaguely supposed that *Metarhizium* and *Beauveria* produce toxins to kill their hosts, but several other views were expressed at the meeting. Toxins may help fungi survive better in the soil, and their entomopathogenic effect may be as much to protect spores against soil-dwelling scavengers as to act against their host.

Study of toxins does figure in the newly-drafted EU guidelines on registration of microbiological plant protection products, and it is necessary for producers to know what toxins are produced, how much are in the product, and whether there is any risk of any contamination in the food chain. It is a bit unfortunate for biopesticides that products are starting to enter the registration process in Europe just as there is extra official caution about toxins from the various food scares recently. A talk from the British Pesticides Safety Directorate made it plain that any significant component of biopesticide preparations must be accompanied by a full toxicological profile.

There were quite a number of talks on bioprospecting and the exploitation of novel compounds. This area is clearly attracting a lot of commercial interest; the expense and sophistication of the high-throughput screening technology in use in this area means that only a few large companies are involved.

There were a number of talks on techniques, and it does appear that it is quite straightforward for specialised laboratories to prepare complete 'metabolite profiles' for fungus strains under a number of conditions; this is probably something that should be considered quite early on in the process of developing novel fungal biopesticides. Various techniques for the detection and quantification of mycotoxins were described.

For those who were unaccustomed to British spring weather, there were a few surprises, with brilliantly sunny days interspersed with totally wet miserable days. And for those who had forgotten that Britain is a developing country, the great British public transport system was a good reminder.

Anyway, overall, thanks and congratulations to the organisers, the BMS and particularly Tariq for a most interesting meeting.

Chris Lomer, KVL
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1871 Frederiksberg
Copenhagen, Denmark
Tel: (45) 3528 2672, Fax: (45) 3528 2670
Email: clo@kvl.dk or clomer@yahoo.co.uk

PUBLICATIONS

Field Manual of Techniques in Invertebrate Pathology available at reduced price.

Zuzana Bernhart from Kluwer Academic Publishers informs us that the *Field Manual of Techniques in Invertebrate Pathology* (ISBN) is available for the "Course Adoption Price" for 6 copies or more for: US$74 / GBP52 per copy. This price will be effective from May 20, 2001. Their webpage catalog for books, including those available at reduced prices is: http://www.wkap.nl/book.htm/, or

contact customer services (services@wkap.nl) or Ms. Bernhart for further details. Her contact information is: Biosciences Division, Kluwer Academic Publishers.
Tel: ++31 (0)78 6392129 Fax: ++31 (0)78 6392334
E-mail: zuzana.bernhart@wkap.nl Information on the Manual of Techniques can be found at: http://www.wkap.nl/book.htm/0-7923-6269-1

More Information about SPARC:
Declaring Independence: A Guide to Creating Community-Controlled Science Journals is a how-to handbook and web site that guides editors and editorial board members of scientific journals toward responsible journal publishing. To see the site or download a PDF version of the handbook, please go to: http://www.arl.org/sparc/DI.

As you know, many editors and editorial board members of STM journals are unaware of the serials crisis; more to the point, they are unaware they may be part of a journal for which high cost and unsatisfactory policies contributes to the serials crisis. DECLARING INDEPENDENCE presents this issue in a straightforward way to researchers who may wonder what their responsibilities are and how best to change the status quo.

DECLARING INDEPENDENCE is divided into three sections: the first helps researchers determine whether or not their journal serves its community; the second presents alternative publishing options; the third guides researchers through an evaluation process of these alternative options. There are also extensive web resources and journal pricing charts included in the appendices, along with a bibliography.

Our goal throughout was to back up librarians' excellent educational efforts on campus. DECLARING INDEPENDENCE is a complement to the work many of you have already undertaken vis a vis SPARC and the Create Change campaign.
The handbook will be mailed (via traditional post) to about 1400 editors and editorial board members of STM journals (based on the Create Change database of the 100 most expensive journals, located at www.createchange.org/resources/journal.html). We are also distributing it through scientific associations and at ALA. Each SPARC and ARL library will receive five copies; any institution can order up to 50 additional copies, free of charge, by sending an email to pubs@arl.org.

Thank you very much for your support. Please post this within your institution and/or to any relevant listservs, and feel free to email me any feedback or comments.

Alison Buckholtz
SPARC--The Scholarly Publishing & Academic Resources Coalition
alison@arl.org www.arl.org/sparc
phone: +202 296 2296

Book Reviews for the SIP Newsletter

If you would like to have your book reviewed or if you would like to review a book, please contact our book review editor:

Dr. James Becnel, USDA/ARS, CMAVE
P.O. Box 14565
Gainesville, FL 32604 USA
Tel. (352) 374-5961
Fax. (352) 374-5966
e-mail: jbecnel@gainesville.usda.ufl.edu

BOOK REVIEWS

Microbial Pest Control. By Sushil K. Khetan.
Marcel Dekker, Inc. New York. 300 pp. $US150.

Microbial Pest Control is divided into three major parts: bacterial insecticides; viral insecticides, biofungicides, bioherbicides and mycoinsecticides; and integrated use and commercialization of biopesticides. The section on bacterial insecticides takes up just under half of the book and is divided into five chapters covering: various aspects of *Bacillus thuringiensis (*production, classification and nomenclature, crystal proteins and genes, insecticidal activity, mode of action, persistence, safety and ecotoxicology); bacterial insecticides for crop and forest protection and insect vector control; genetically modified *Bt* strains and *Bt* transgenic plants; formulation; and resistance.

A fair portion of the book, especially in the section

on bacteria, covers issues that have been treated in greater detail in other texts and review articles over the past 10 years (classification, mode of action, safety, etc.). The specifics of applied microbial control of insects receives fairly light and somewhat incomplete coverage considering the title of the book. For example, in Chapter 2 on bacterial insecticides for crop and forest protection, only two varieties of *Bt* and *B. sphaericus* are included. There is little or no coverage of other species of bacteria or of other varieties of *Bt* that are routinely utilized for microbial control (*Paenibacillus popilliae*, *Serratia entomophila*, *Bt* var. *tenebrionis*). There is brief mention of some of these in other chapters. Practical issues in microbial control receive scant attention in this and other chapters. For example, there is a list of target Lepidoptera against which *Bt* var. *kurstaki* is used, but little or no information on application rates, methods or frequency of application. Much of the information for *Bt* covered in Chapter 1 (genetics, toxin proteins, mode of action, safety, persistence) is repeated again in Chapter 2. The chapter on formulation of bacterial insecticides provides some useful practical information, as well as an overview on the subject. The concise overviews of genetic modification and resistance to *Bt* toxins will be useful to the uninitiated.

The chapters on viral and fungal insecticides are relatively short. The virus chapter is confined to baculoviruses and includes some errors in nomenclature and classification. The coverage of microbial control (practical usage) in this chapter is a brief two pages. The longest section of the chapter covers genetic modification. The chapter on mycoinsecticides provides brief overviews on mode of action, production and formulation and less than two pages plus a table are devoted to fungi for insect control.

Conspicuous by their absence from the book are the entomopathogenic nematodes. Although they are multicellular and technically not microbes, their insecticidal activity is due to symbiotic bacteria and they are regarded as biopesticides.

The chapter on integrated use of biopesticides and synthetic chemical pesticides briefly covers entomopathogenic bacteria, virus and fungi in addition to biofungicides and bioherbicides. The heading “Integrated Use of Bioinsecticides” of the insect related subsection of this chapter is somewhat misleading in that integrated control in the IPM sense is not addressed.

For those of us who do not work on microbial control of fungi or weeds, the chapters on these subjects and the sections of the chapters on integrated use of biopesticides and commercialization of biofungicides and bioherbicides provide concise sources of information on these subjects.

The chapter on commercialization gives brief histories for various microbial agents and insights into technical constraints of commercialization, the market environment and some of the hurdles that must be overcome in order to commercialize biopesticides.

Throughout the book, many of the flow chart type figures (those not borrowed from other sources) are unclear in meaning. The book is also under referenced in several places. It would be good to be able to confirm certain statements by returning to the original research upon which they are based. For example, *Bti* is attributed with activity against larval horn flies and stable flies, but no reference is given.

There is a wealth of information on microbial control that is available in more comprehensive and better organized texts. The $150 price tag for this book is higher per page than most of the recently published books that have justifiably drawn criticism for being overpriced.

Lawrence A. Lacey
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LETTERS TO THE EDITOR

The following letters were elicited by the February 2001 SIP Newsletter editorial on the high cost of textbooks.

Baruch Sneh:
I read with interest Mark Goettel's editorial message in the recent SIP Newsletter entitled: Can we declare independence from high priced books? This is a very important issue that should be seriously dealt with and in our era it can be solved to the benefit of all people who use the books. A book that I edited was

published in 1996 by Kluwer Academic publishers (588pp.) costs $ 244 although the publisher received a final camera-ready hard copy from my computer. All they had to do was to copy, bind, and sell. In my negotiation with the publisher they said that if they received a camera-ready copy the price would be lower than if the publisher had to work on an unfinished text. The high price deterred many interested scientists from buying this book and most of the copies were sold to libraries. I was very disappointed as I and others invested a lot of effort. We did not receive any reward for it and the book is not sufficiently available to readers as it should be.

In the era of virtual communication there are sufficient opportunities to overcome the expensive traditional spread of information by printed books. An example of such a possibility, which exists now on the web, is a virtual interactive textbook on Insect Physiology, originating from Colorado State University. One of the Editors is from Israel. The website is: http://lamar.colostate.edu/~insects/

I think that we will see more editors choosing this handy way to publish their books in future. It will increase tremendously the availability of the information to all potential readers.

Baruch Sneh
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Ramat Aviv
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Mark Goettel replies to Dr. Sneh:
Many thanks for your comments. You are certainly not the first to experience this situation. Denis Burges is very disappointed at the price of his book on formulation as are Lerry Lacey and Harry Kaya with their book on field techniques. With the latter, the editors were also promised a reduction in the cost of the book if it were provided camera-ready. The editors went further and even arranged to forfeit any monetary compensation to themselves and all contributing authors. The book sells at something like $350!

Mark Goettel
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Lawrence Lacey:
I think it would be great to use the SIP web page for e-publication of future insect pathology books. CD's could also be made available at a nominal cost. In addition to web links (starting with the SIP list server) for publicity, authors could also reach appropriate audiences through newsletters and encourgae citation in other publications. If and when I write another book, I will certainly use this form of publication.

Lawrence A. Lacey
USDA-ARS
Yakima Ag. Res. Lab
5230 Konnowac Pass Rd.
Wapato, WA 98951 USA
e-mail: llacey@yarl.gov

Andrew Chapple:
As one of the contributors to Lerry Lacey's recent book, I was more than annoyed to hear about the eventual cost. This seriously limits the 'reach' of the book. I see no reason why future publications like this shouldn't go out on the web. After all, the contributions to Lerry's book were done essentially free. Yes, there are the kudos of a refereed book chapter, but financial reward was never part of anyone's calculations .

Provided quality did not suffer, a *.PDF book would be a superb way to by-pass the middlemen, who, in this case, added nothing and probably detracted from the eventual success of the man years that went into the book.

Andrew C. Chapple
Environmental Science Biology
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e-mail: andrew.chapple@aventis.com

John Vandenberg
My 2 cents: I fully support web-based publication. PDF, HTML, or whatever. The concern I have is permanence. I've cited web sites in grant proposals and then later tried to use the link to find new information (for a resubmission) only to find the location of the information had changed. So, we need to involve libraries in this....and I'm sure there must be librarians already way ahead of us in

looking into this issue. Does anyone have connections to this or knowledge of the current state of library-based web publications?
John D. Vandenberg, Ph.D.
Research Entomologist & Lead Scientist
USDA Agricultural Research Service
U. S. Plant, Soil & Nutrition Laboratory
Tower Road, Ithaca, NY 14853 USA
e-mail: jdv3@cornell.edu

Harry Kaya:
The high cost of books is criminal, and it is good to see that there is an uprising of concern about this issue. Lerry and I were upset when we found out about the cost of the field manual. No one expected to get royalties and none is forth coming. The authors and editors did all the work to get a camera ready copy to the publisher. The intent was to get the book to the practitioners at a minimal cost.

To bypass the publisher, PDF files are one way to go. Another method is to place the information on a CD. It is inexpensive, a lot of information can be placed on a CD, animation can be used, and it is as easy to carry around as a zip disk. I assume that there would be ways to copyright the information, if necessary. If there is no need to copyright the information, this would be a non-issue. Also I presume that the libraries, now or in the near future, will carry "books" on CD. The information on a CD can be reviewed by peers. Times are changing quickly and we need to adapt to the newer technologies that are becoming available. I still prefer hard copies, but I need to adapt or be left behind.
Harry K. Kaya
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e-mail: hkkaya@uc.davis.edu

Larry Duncan:
The Florida Center For Library Automation at University of Florida (352-392-9020) has been very active in promoting online publication of journals such as *Florida Entomologist* and *Nematropica*, both of which are freely available on their server. Links to the journal are via the Society webpages. The director of the center, James Corey, could probably provide useful information about libraries that are involved in electronic publication.
Larry Duncan
Professor of Nematology
University of Florida
Editor in Chief of Nematropica

An excellent suggestion from Denis Burges:
I have what could be a great idea. Many members are concerned about the high price of specialist scientific books, which has stimulated a running email dialogue among members over the last 2 years and has recently blossomed enormously. Although not directly microbial control, it should generate great interest as a symposium, e.g., 'The future of scientific publication'. We could bring in some outsiders for 'the publisher's viewpoint' - I could suggest a progressive chap from a UK publisher.
Denis Burges
21 Withdean Ave., Goring by Sea
Worthing, W. Sussex, BN124XD
United Kingdom
e-mail: denis@hdburges.freeserve.co.uk

Editor's note: Mark Goettel and Lerry Lacey have expressed an interest in organizing such a symposium.

On the Science of *Bt* and Politics of its Safety

In a Letter to the Editor in the February 2001 SIP Newsletter, Vincent Sanchis and Denis Bourguet called for a disentanglement of the scientific and political issues that confront *Bacillus thuringiensis*. Their letter resulted from an incident that followed a presentation at the SIP Mexico meeting by Dr. Anne-Brit Kolsto on the genetic relatedness of *B. thuringiensis*, *B. cereus*, and *B. anthracis*. For those not present at her talk the letter by Drs. Sanchis and Bourguet requires some explanation to be fully understood. So, as I was inadvertently primarily responsible for what happened, I will briefly describe this incident and then give my view of what it meant with respect to Dr. Kolsto's talk and the science and politics of *Bt*'s safety.

Dr. Kolsto presented an interesting and careful study on the molecular systematics of the above mentioned and related *Bacillus* species. Her recent studies and those of others extend earlier research like that of Paul Baumann's group in the mid-1980's which provide strong evidence that *B. thuringiensis* is essentially *B. cereus* with endotoxin encoding

plasmids, with *B. anthracis* being a more distant relative. I think that most people in the field have accepted this for many years, and thus Dr. Kolsto's results were not surprising. An implication of these and earlier findings, which again knowledgeable people have been aware of for years, is that because *B. cereus* produces enterotoxins during vegetative growth that are capable of causing food poisoning in humans, the same is potentially possible for *B. thuringiensis*. But having the potential does not mean that *Bt* causes food poisoning in humans, especially when used properly. At the very end of her talk, in fact her closing remark, Dr. Kolsto stated something to the effect that those who recommend *Bt* be used for insect control should be aware this practice is spreading enterotoxin genes around that may lead to enteric diseases in humans. The implication of this statement is that *Bt* may well be causing enteric diseases in humans. Given the extensive safety record of *Bt*, this was an unscientific and inflammatory comment. It was inappropriate in that the implication went far beyond her data, and in fact contradicted numerous published and other studies carried out on the safety of *Bt* insecticides by various environmental protection and health agencies in many countries around the world[1].

After Dr. Kolsto finished her presentation, I made a few comments about *Bt* systematics, but also firmly expressed my view that I thought her comments on the safety of *Bt* were inappropriate. I pointed out that this was especially true given the variety of data from experimental laboratory studies on *Bt*'s safety and its long track record of safety in operational pest control programs. When I finished my comments, truly to my surprise, the 100 or so people in the audience burst out in applause. The applause was not for anything I said about the quality of Dr. Kolsto's studies of *Bt*'s molecular systematics. Rather, I interpret the applause as an endorsement of my opinion on the inappropriateness of Dr. Kolsto's comment on *Bt*'s safety. With her closing comment, Dr. Kolsto moved her results from the realm of science into politics.

I respect Drs. Sanchis and Bourguet, but politely disagree that the science and politics of *Bt*, at least in this incident, were entangled. My comments and the responding applause were directed at Dr. Kolsto's political statement, not at her science, for which she was rightfully applauded. There is no such thing as absolute safety, and no one ever said that *Bt* is absolutely safe - such a statement would be unscientific - the safety of *Bt* is a matter of risk assessment, and in that regard, *Bt*'s safety to mammals, as noted above, has been demonstrated in both laboratory studies and long-term pest control programs. I do not think for a second that the applause was meant to offend Dr. Kolsto. It was just that the audience, which contained many individuals well aware of the extensive safety testing that *Bt* has undergone, was unwilling to accept without some protest the implications of a statement that was not supported by the scientific literature.

The story of *Bacillus* systematics as it relates to *Bt* is still underway, and within the next few years we will all become better informed about the relationships of the various species and the potential implications for *Bt*'s safety. I am in full agreement with Drs. Sanchis and Bourget that our discussions must be based on science. But I also think we have a professional responsibility to be careful in how we interpret and draw implications or conclusions from the science, especially when speaking in a public forum about a topic that is so routinely in the news.

Brian A. Federici
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email address: brian.federici@ucr.edu
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Voice 909-787-5006

[1]For a recent review and access to the earlier literature on the safety of Bt to mammals, see the following reference: Siegel, J. P. (2001) The mammalian safety of *Bacillus thuringiensis*-based insecticides. Journal of Invertebrate Pathology 77, 13-21.

ON THE WEB

Remember to check the SIP Web site (www.sipweb.org) regularly for updates from the 2001 Meeting Organizers. Abstracts and schedules will be posted as soon as they are available.

You can also renew your membership online, add links and post job announcements!

Peg Rotstein

EDITOR'S NOTES

The ideas (and frustrations) expressed by SIP members concerning the recent inflated prices for textbooks initiated a dialogue of sorts that is particularly suitable for publication in the SIP Newsletter. The mechanism for publication of these letters was initiated when members copied interested colleagues as well as the Newsletter editors in their email discussions. Permission was obtained from each writer to include comments in the Newsletter, and an opportunity to edit messages for publication was provided.

There are many other issues concerning invertebrate pathology and biological control that could be briefly addressed using this format. The Newsletter could thus serve as a catalyst for further discussion and action on various issues. We would be pleased to include other 'e-discussions' that would benefit members of SIP. Please keep the Newsletter in mind as a way of considering various issues that are of interest to you and your colleagues.

Lee Solter & Mark Goettel

Don't Forget to Pay Your Dues for 2001

To ensure that your membership remains current and that you continue receiving the Newsletter, please return your dues notice with payment or access the web site for online dues payment. Please contact the SIP Executive Secretary if you have questions or need information about payment. (See Page 2 for addresses.)

Attendees at the Southern Regional Project S-301, "Development, evaluation and safety of entomopathogens for control of arthropod pests", February 25-26, 2001.

Society for Invertebrate Pathology

1997 Slide Atlas of Basic Invertebrate Pathology

Copies of the slide atlas entitled "1997 Slide Atlas of Basic Invertebrate Pathology" are still available. Previously, the Society produced a slide atlas in 1984 entitled "Color Slide Atlas of Invertebrate Pathology" and in 1992, the Society's Division of Microbial Control compiled an atlas, centred around microbial control, which was entitled "Color Slide Atlas of Microbial Control." **The new slide atlas** is about **basic invertebrate pathology** and includes 200 slides, 40 from each of the major groups generally included in this field of study (viruses, bacteria, fungi, protozoa, nematodes). Each group of slides was put together by researchers working with that group of pathogens. Slides principally include transmission and scanning electron micrographs, light micrographs, histology sections, pictures of pathogens, infected, dead, and healthy hosts, and life cycle schematics. Figure legends describing each slide are included with each slide set.

The Slide Atlas costs $60 (U.S.). Please pay using a check or money order made out to "Society for Invertebrate Pathology." **If you pay with a check, the check must be drawn on a bank with a U.S. affiliation.**

Society for Invertebrate Pathology
7413 Six Forks Rd. #114 Raleigh, NC 27615 U.S.A.
FAX: (919) 841-4133;
Toll Free FAX (US & Canada Only): 1-888-684-4682

Number of slide atlases requested: _____

Amount of money enclosed: _____

Name and address for delivery of the slide atlas (please print):

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Tel: _____ Fax: _____ e-mail: _____

SOCIETY FOR INVERTEBRATE PATHOLOGY
2001 Membership Form

PLEASE RETURN THIS FORM WITH YOUR PAYMENT

(US CURRENCY ONLY) (Checks to be drawn on U.S. Bank) Make Checks Payable to: **Society for Invertebrate Pathology**
Please Mail Form to: 7413 Six Forks Rd BOX 114, Raleigh, NC, 27615 U.S.A. **Telephone**: Toll Free in North America **888-486-1505**; Outside of North America (919)841-4133 **FAX**: Toll Free in North America **888-684-4682**; Outside of North America (919)841-4133; EMAIL: sip@sipweb.org

Or... Submit your application and pay by credit card ONLINE at WWW.SIPWEB.ORG

BACKGROUND INFORMATION (*Please Print Clearly)*			
First Name:	Middle Initial:	Last (Family) Name:	
Organization:			
Street Address or PO BOX:			
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Phone:	FAX:	E-mail:	
Please check appropriate box:	☐ Above is new address	☐ New Member	☐ Renewal

Annual Dues January 2001 – December 2001 (All Amounts in US Dollars)		
Membership (founding, charter and regular member)	☐	$30.00
Student membership ***(Complete Certification Below)***	☐	$15.00
Division of Microsporidia	☐	$2.00
Division of Microbial Control	☐	$2.00
Division of Virology	☐	$3.00
Division of Bacteria	☐	$2.00
Division of Fungi	☐	$2.00
Division of Nematodes	☐	$2.00
Journal of Invertebrate Pathology (special member price includes $3 handling) (**Canadian subscribers only** add GST number + 7%)	☐	$202.00 $_____GST
Society contribution (For General Operations):	☐	$_____
Endowment contribution (To Support Foreign Memberships):	☐	$_____
Mauro Martignoni Fund (To support student travel to SIP meetings)	☐	$_____
ENTER TOTAL DUE:		$_____

Please check the box if you agree:

☐ I wish to receive a hardcopy of the Newsletter by mail (The Newsletter is also available in the Internet on the SIP web page)

☐ I do not wish for my information to made available on the Internet membership database or ☐ Include my Name and E-mail only

CREDIT CARD INFORMATION: **PLEASE TYPE OR PRINT LEGIBLY**

☐ **VISA** *(Must have 13 or 16 numbers)* ☐ **MASTERCARD** *(Must have 16 numbers)* ☐ **AMERICAN EXPRESS**

Card Number _____ Expiration Date _____

Name on Card _____ Authorized Signature _____

STUDENT MEMBERSHIP (Please Print Student's Name)

I certify that _____ is a candidate for an advanced degree in a field related to the study of Invertebrate Pathology Institution_____ Department _____
Signature of applicant's major research advisor) :_____