



Society for Invertebrate Pathology Newsletter

Volume 48 Issue 2

June, 2015



Downtown Vancouver at Sunset. Photo Credit: Magnus3D

Meeting Events:

Saturday

Registration (2 pm - 8 pm)

Sunday

SIP Council Meeting
OECD Satellite Symposium
Bacteria Workshop
Opening Mixer

Monday

Founders' Lecture
Plenary Symposium
Concurrent Sessions
Division Business Meetings

Tuesday

Concurrent Sessions
Excursions and 5K Race
BBQ at the Cheakamus Center

Wednesday

Concurrent Sessions
Posters
Division Business Meetings

Thursday

Concurrent Sessions
SIP Annual & Student Business
Meetings
Award Ceremonies and Banquet

President

Peter Krell, Canada

Vice President

Johannes Jehle, Germany

Past President

Jørgen Eilenberg, Denmark

Secretary

Mary Barbercheck, USA

Treasurer

Stefan Jaronski, USA

Trustees

Surendra Dara, USA

Albrecht Koppenhofer, USA

Ed Lewis, USA

Monique van Oers, The Netherlands

Newsletter Editor

Eric Haas-Stapleton, USA

SIP Office

Society for Invertebrate Pathology

PO Box 11 Marceline, MO 64658, USA

Email: sip@sipweb.org**Web:** www.sipweb.org**Phone/Fax:** +1- 660-376-3586 (USA)**From the President**

Dear SIP Colleagues,

This communiqué is threefold. First, I would like to encourage those of you who have yet to do so to register for the 2015 SIP in Vancouver Canada, second, convince those with a flair for writing to step up to replace Eric Haas Stapleton as SIP Newsletter Editor and third, inform you about our Golden Jubilee Committee.

The 48th SIP meeting is just around the corner, August 9 to 13, all in the newly opened "The Nest" at the beautiful University of British Columbia campus, overlooking the Strait of Georgia between Vancouver and Vancouver Island, and only a short bicycle ride of about 90 miles (150 km) north of Seattle. There are many reasons to attend, just check out the meeting's website on the SIP home page. Famous for its natural beauty with great opportunities for hiking, canoeing and nature photography, along with both classical and aboriginal culture with a mixed east/west cuisine. Moreover, there is easy access with many direct flights from both east (Frankfurt/London) and west (Beijing/Sydney) and within North America. In addition to choosing a stunning venue, the local organizing committee, Mark Goettel, Todd Kabaluk, David Theilmann, Jenny Cory, Joan Cossentine, Deborah Henderson, Beth McCannel and Alida Jarmeet, among others, is putting on an exciting scientific and social program, including a few novel workshops. The Founders' Lecture, to be presented by Grant Stentiford, will honour Phyllis T Johnson, SIP President 1980-82. Leellen Solter was successful in convincing OECD (Organization for Economic Co-operation and Development) to sponsor a Symposium on "Microsporidia in the Animal to Human Food Chain: An International Symposium to Address Chronic Epizootic Disease" in conjunction with the SIP to be held Sunday, Aug 09. The bacteria division is hosting a unique, Industry-oriented Workshop in the afternoon of Sunday Aug 09. More information is posted in this newsletter and is already available on the 2015 Annual Meeting's Website. In addition to regular presentations there will be **six divisional symposia, three cross divisional symposia and five divisional workshops**. Along with many social activities, there is something for everyone.

I urge all SIP members and their colleagues and students who have not already done so to register for this meeting. There will be a lot to learn, collaborations to forge and friends to meet. Registration is easy and can be done on line from the Meeting's Web site.

Those of you who are reading this newsletter will recognize the many contributions of the SIP Newsletter Editor, Eric Haas Stapleton. Eric took over for the June 2011 Newsletter from Surendra Dara, the previous editor. Regrettably Eric is relinquishing his editorship. I know I speak for all readers about how much we

**Table of Contents**

Meeting Events	1
From the President	2
2014 Founders' Lecture	3
Meeting Overview	5
Scientific Program	9
Announcements	12
Photos from 2014 Meeting	13



appreciate Eric's stewardship of the Newsletter and keeping us informed over the past four years and we thank him for this outstanding service to SIP. As a consequence of Eric's departure we are now looking for a replacement editor and co-editor. For those with a flair for and interest in writing and layout and meeting people, we invite indications of interest or suggestions for anyone with publishing talents and looking for an opportunity to exercise them to contact Peter Krell (pkrell@uoguelph.ca). Having both an editor and co-editor should lighten the load for both. Eric has sent me a summary of his duties which I can share with anyone expressing interest. It is an excellent way to get to know the SIP members better and to hone your written communications skills (and is something to include in your CV).

The SIP council held its annual winter teleconference Feb 16. In addition to regular business, several "New Initiatives" were brought up and will be discussed further at our Vancouver Council Meeting. One of these is our upcoming Golden Jubilee meeting in 2017. As initially suggested by Just Vlak (SIP President 2004/2006 when yours truly was his secretary) and as approved by council, we have struck a Golden Jubilee Committee whose mandate will be to ensure that our 50th anniversary meeting will be a fitting one. Members include, in alphabetical order, Elizabeth Davidson, Gianpiero Guelli Alletti, Kelli Hoover, Johannes Jehle, Nina Jenkins, Peter Krell, Leellen Solter, Grant Stentiford and Monique van Oers, representing a broad spectrum of our membership. They will recommend a venue and assist in suggesting, and organizing Golden Jubilee events, contests, publications, celebrations, awards, etc. leading up to and during the 2017 meeting. However we will entertain proposals from any of the membership, just let any one of us know of your ideas.

Looking forward to seeing you all in Vancouver and wishing you a warm "Bienvenue".

Peter Krell

Founders' Lecture Award



Dr. Grant Stentiford, Founders' Lecturer

Founders' Lecture by Dr. Grant Stentiford

Grant Stentiford is Principal Scientific Officer and Team Leader of the Pathology and Molecular Systematics Team at Cefas Weymouth Laboratory. He also holds the position of Director of the European Union Reference Laboratory for Crustacean Diseases on behalf of DG SANCO of the European Commission. He has a BSc (first class) in Life Sciences from the University of Nottingham, UK (1993-1997) and a PhD in invertebrate pathology from the University of Glasgow (1997-2000). His work focuses on aquatic animal pathology and combines approaches based upon histopathology, transmission electron microscopy and molecular systematics for the classification of novel and emerging pathogens; and for the definition of contaminant-induced pathologies. He has considerable experience in the diagnosis of disease in experimental, farmed and wild aquatic animals and has a wide collaborative network within the UK, Europe and around the world.

He established the first European Union Reference Laboratory for Crustacean Diseases (EURL) at the request of the EC in 2008. The EURL coordinates the activities of 27 Member State National Reference Laboratories across the EU. The EURL leads in

pathogen diagnostics in this animal group and is a globally recognised expert centre able to respond to disease outbreaks in farmed and wild animals (see www.crustaceancl.eu). Much of his work utilises clinical (histology, electron microscopy) and molecular (PCR, QPCR, NGS) data for the detection and classification of novel pathogens; rapid and accurate diagnostics being at the centre of national and regional responses to disease outbreaks in wild and farmed aquatic animals.

He has published over 95 ISI papers (including papers in Environmental Science and Technology, International Journal for Parasitology, ISME Journal, Trends in Parasitology, Current Biology, PLOS One, PLOS Comp Biol, Journal of Proteome Research). He has guest edited two Special Volumes of the Journal of Invertebrate Pathology (2010, 2012) and one Special Volume of Diseases of Aquatic Organisms (2012) on crustacean diseases and food security. He has a Scopus H index of 24 (last checked on July 1st 2015) and was recently elected to Fellow of the Royal College of Pathologists (FRC Path) (2014). He was Subject Editor for Diseases of Aquatic Organisms (since 2006) and Associate Editor in Chief for the Journal of Invertebrate Pathology (since 2013). He is Chair of an ad hoc Committee for Susceptibility of Crustacean Hosts to OIE Listed Pathogens (2014-2016). He is a Trustee and Chair of the Science Committee of the UK National Lobster Hatchery (since 2011).

Dr. Stentiford established a new Division (Diseases of Beneficial Invertebrates) of the Society of Invertebrate Pathology (SIP) in 2009 and was inaugural chair of the Division between 2009 and 2012. In this role he organised international symposia on aquatic animal and bee diseases in the USA (2009, 2013), Turkey (2010), Canada (2011, 2015), Argentina (2012) and Germany (2014). He secured funding from the OECD to host an international symposium (Canada) in 2012 on the topic of 'Crustacean Diseases and Global Food Security' and is co-applicant on a second OECD funded symposium on 'Microsporidia in the food chain' in Vancouver, 2015. He has organised and chaired 7 annual meetings of the EU Member State National Reference Laboratories for Crustacean Diseases in the UK, Italy and Finland between 2008 and present. He has been invited to talk at conferences associated with aquatic animal disease in the UK, Brazil, Argentina, Canada, Taiwan, Thailand and Malaysia.

In addition to Directing the EURL, he has lead on numerous projects for the UK Department of Environment, Food and Rural Affairs (Defra) associated with aquatic animal health and disease and has for almost a decade been associated with health monitoring in wild marine fish under the UK Clean Seas Environmental Monitoring Programme (CSEMP). This work informs policy making under international Directives (such as the MSFD) and has been published widely within the scientific literature. He is an honorary Associate Professor at the University of Exeter, UK where he has ongoing projects in invertebrate host-pathogen interaction.

Founders' Lecture In Recognition of Dr. Phyllis T. Johnson Prepared by Grant Stentiford



**Dr. Phyllis Johnson,
Founders' Honoree**

Phyllis Truth Johnson was born in Salem, Oregon on the 8th of August 1926. Daughter to a high school mathematics and science teacher mother, and a biological oceanographer father, she spent her early years in Friday Harbor, Washington. On completion of his PhD at the Friday Harbor Laboratory, her father, Martin W. Johnson, secured a research position at the Scripps Institute of Oceanography in southern California where he later became professor. It was here that a young Phyllis was first exposed to life on the Scripps campus and to the dramatic Pacific coastline on which it sits. It was also during this formative period that her lifelong love of the ocean blossomed after self professed '*joyful and explorative*' summers on the beaches of La Jolla whilst her father conducted his teaching and research. Those early scientific influences, arising both from her parents, and from the very environment in which she found herself, had a profound effect on her own journey through science and led to a pioneering and independent spirit which was to underpin many of her considerable future professional outputs.

In 1948, at the age of 22, Phyllis obtained her A.B. in Zoology from the University of California, Berkeley. Shortly afterwards, she was introduced to the topic of Parasitology by her then graduate advisor and Dean of the Graduate Division, Professor Morris A. Stewart. During the period 1948 to 1950 she worked in the Bureau of Vector Control of the California Department of Public Health identifying ectoparasites obtained during surveys of wild rodents for bubonic plague. Around this time, it was by fortuitous luck that during the annual meeting of the American Association for the Advancement of Science (AAAS) at Berkeley, Phyllis was introduced by Professor Stewart to Major Robert Traub, a fellow parasitologist and flea expert. It was the combined South American flea collections of Professor Stewart and Major Traub that convinced Phyllis to not only undertake her PhD studies on this group of arthropods, but also to move away from the southern California coastline to do so. The majority of her PhD studies were to be conducted at the Walter Reed Army Medical Center in Washington, D.C. under the guidance of Major Traub. During this period she also elected to spend 6 months in Korea working on Korean Epidemic Hemorrhagic Fever under the guidance of Major Marshall Hertig prior to her return to Berkeley briefly as a prerequisite to graduation from this establishment, in 1954. It was also during this period that she was to meet Professor Ed Steinhaus – taking his course in Insect Pathology and *‘enjoying the experience greatly’*. Her thesis, *‘A Classification of the Siphonaptera of South America’* was published as a Memoir of the Entomological Society of Washington in 1957.

Following completion of her PhD, Dr Johnson was employed as an Entomologist in the Department of Agriculture of the US National Museum in Washington, D.C. where she became curator for collections of fleas and lice between 1955 and 1958. Over this whole period, she demonstrated her penchant for arthropod taxonomy, and for scientific writing, by describing over a dozen new species of flea infesting hosts from North and South America, formation of several revisions on flea taxonomy, occurrence and taxonomy of mosquitoes, and numerous descriptive studies on sucking lice of the order *Anoplura*. In addition to this growing specialism in ectoparasites, she was also initiated into their own maladies - involving herself with studies to isolate and culture *Rickettsia tsutsugamushi* (= *Orientia tsutsugamushi*), vectored by trombiculid mites, and the causative agent of ‘scrub typhus’ in humans.

Whilst at the US National Museum in Washington, D.C., Phyllis further developed her interest in arthropod pathogens by initial collaboration (1957) and subsequent employment (1959 to 1963) as a Medical Entomologist working on the epidemiology of leishmaniasis, again under the supervision of Marshall Hertig at the Gorgas Memorial Laboratory in Panama. During this period, in addition to publishing works on leptomonad flagellate life stages within dipteran hosts she also continued to contribute literature on the taxonomy of fleas and lice, and on the culture of dipterans. Phyllis left the Hertig laboratory in 1964 (*‘...the tropical heat finally got to me, and I wanted to get back to the USA’*). However, in the following period, Phyllis produced numerous other publications covering her work on leishmaniasis and particularly, on the taxonomy of lice from the region.

In 1964, Phyllis accepted the position of Assistant Pathobiologist (later rising to Associate) within the Pathobiology Unit, and later the Centre for Pathobiology, at the University of California in Irvine. Once again, she was reunited with her earlier mentor, Professor Ed Steinhaus, though recalls that the Centre took some time to become fully established following her arrival: *‘...The University of California, Irvine was not completely built at the time I joined Ed Steinhaus’ Centre for Pathobiology.....because no laboratory was yet ready for me, Ed suggested that I compile the Annotated Bibliography. Which I happily did’*.

Embarking on the seemingly focussed venture of collating the pathology literature relating to ‘non-insects’ led to publication of her ‘Annotated Bibliography’ in 1968 (Johnson and Chapman, 1968) with a Supplement published a year later. The amassing of over 2500 manuscripts, theses and other reports was to take Phyllis on a journey through a world hitherto unknown to her, and to many of those invertebrate pathologists with whom she had interacted to this point in her career. Although clearly influenced by her close colleagues at Irvine (*‘...I am indebted to Drs Taylor, Steinhaus, and Harshbarger for reviewing the speculations to be found in the introductory part [of the Bibliography]. They have not only provided ammunition but shot down some of my more obvious flights of fancy’*), Phyllis demonstrated a fierce independence of thought in her analyses of cross-cutting topics of the day. Tellingly, she reminded those working in the wider pathology arena that the study of pathology in invertebrates other than insects got off to an ‘auspicious start’ following the pioneering research

of Metchnikoff in 1884 who first demonstrated the (now) universal phenomenon of phagocytosis. She also revealed fascinating insights into the potential for the (still) controversial subject of acquired immunity in invertebrates – collating opinions that perhaps to study this best, one should focus on much longer-lived invertebrates (such as *Limulus* and *Homarus*, and even sea cucumber genera such as *Cucumaria*) than some of the short-lived models historically (and currently) investigated. In addition, her amassing of the literature led to some tantalising links between neuro-secretion, immunity and pathogenesis in non-insect invertebrates. Further, the Bibliography highlighted the relative infancy at the time in disciplines such as epizootiology – though even then, Phyllis remarked on the not-insignificant potential for disease to interrupt marine invertebrate production when *'man begins to farm the sea in earnest'*. Even at this time, it was clear to Phyllis that the sheer diversity of invertebrate phyla represented in the Bibliography had been a fundamental reason preventing the formation of a single group of pathologists to discuss their maladies. To this end, her Bibliography had, for the first time brought together a disparate field and created a legacy that can only be described as a foundation stone for those present day pathologists studying non-insect systems.

It was her words within the Introduction of the supplement to the Bibliography which perhaps best revealed the burgeoning interest in 'non-insect' invertebrate pathology over this period. To this end, she noted: *'...the present supplement contains almost 500 new citations, most of them papers published in 1967-1969'* and furthermore *'...we are producing this Supplement as a public service to our unsuspecting colleagues who, as naively as we, used to believe that when collated, the literature of non-insect invertebrate pathology would prove to be of comfortably small size'*. At least some of this elevation in interest was driven by Phyllis herself with numerous publications over the late 1960's and early 1970's covering the ecology and pathology of marine bivalve molluscs and particularly, hemolymph cytology, immune functioning and pathology of echinoderms. Other work arising from her laboratory covered aspects of the biology of the Porifera Coelenterata, and the Platyhelminthes and of primitive chordates (tunicates), plus several broader reviews on invertebrate pathology and symbioses.

Short periods of employment at the K.M. Heck Laboratory of Environmental Health Engineering at the Californian Institute of Technology (1970-1971) and within the Division of Environmental Studies, Smithsonian Institution, Washington (1971) preceded her final career move, in 1972, to the National Marine Fisheries Laboratory in Oxford, Maryland. It was here, until her retirement in 1987 that she was to focus solely on the anatomy, pathology and pathogens of aquatic crustaceans.

The first virus infection of a crustacean host was described by Vago in 1966. By 1978 (the year in which Phyllis produced her first synopsis on viral diseases of the blue crab, *Callinectes sapidus*), a further 13 were known, four of which caused disease in *C. sapidus*. The descriptions of these viruses bore the hallmark of much of her previous work to date; with a typically detailed focus on the specific organ and cell types implicated by infection, and provision of high quality histological and ultrastructural pathology to illustrate it. Although several of the classifications assigned to early descriptions were subsequently changed, a baculovirus infecting hepatopancreatic epithelial cells, a herpes-like virus infecting haemocytes, a picorna-like virus infecting ectodermal cells., a reo-like virus infecting ectodermal and mesodermal cells and a rhabdo-like virus co-infecting with several of the above pathogens began to reveal a somewhat replete viral profile in this host. In their excellent review of diseases and symbionts of *C. sapidus*, Shields and Overstreet (2003) state that *'other than those from some penaeid shrimps, viral infections in the blue crab are some of the better known from a marine invertebrate host. These blue crab infections are known primarily from descriptive ultrastructural studies by Johnson'*. They also show that of the 8 currently known viruses infecting this host, 7 arose from studies carried out originally by Phyllis and her co-workers over this defining period in Maryland. These are: Bi-facies virus (previously herpes-like virus), Baculo-A virus (previously baculovirus), Baculo-B virus, Reo-like virus, Rhabdo-A virus, Enveloped helical virus and Chesapeake bay virus. In addition to these specific descriptions, Phyllis periodically reviewed developments in blue crab virology, with several publications between 1979 and 1988. Despite this rich seam of viral discovery, a well established approach grounded in the disciplines of histological and ultrastructural pathology led Phyllis to discover and describe numerous non-viral pathogens and idiopathic conditions of blue crabs over this period.

Spotting such abnormalities in this host could only have emerged from a deep rooted knowledge of the 'normal' – a core concept that led Phyllis to embark on arguably her most significant career contribution; the book 'Histology of the Blue Crab, *Callinectes sapidus*'. Eventually published in 1980, the work encapsulated many of the ideas, hypotheses and insights gained during her scientific career to that point. She points out during introductory sections of the book that the synopsis represents the first fully-integrated account of the internal anatomy and (potential) function of decapod organs and tissues. Critically, the book also addresses the considerable variation in appearance and function of these structures during different phases of the normal moult cycle – something that even today serves to confuse the inexperienced crustacean pathologist. Although acutely conscious of those that encouraged her to develop this classic tome, one is struck by a overriding sense of vision in both the opening remarks to the book but also in its structure. In particular, the leading sections covering 'techniques' not only established numerous 'gold standard' approaches to dissection, fixation and staining of internal structures used to this day but also that animal welfare during the process should be at the forefront of our thinking (Chapter 1 leads with '*A humane dissection method that does not cause noticeable artefact is, of course, highly desirable*') (Johnson, 1980). The book remains to this day a seminal reference on the subject of crustacean histology and anatomy .

The completion of the 'Blue Book' marked the start of an important final phase in the professional scientific career of Dr Johnson. Until her retirement from the National Marine Fisheries Laboratory in Oxford, Maryland in 1987, she embarked on numerous other general and pathological studies in other large decapods – including a histopathological study of gaffkemia in homarid lobsters and, descriptions of a rickettsia-like bacterial infection and rhizocephalan parasitisation in lithodid crabs. Working with co-authors, Phyllis was also involved with some of the earliest descriptions of viral pathogens in the burgeoning penaeid shrimp aquaculture industry – a small DNA virus infecting heart myocytes. Her final scientific papers focussed on descriptions of novel pathogens infecting benthic amphipods collected as part of the National Oceanic and Atmospheric Administration's (NOAA) Northeast Monitoring Program (NEMP). Again, in a manner somewhat ahead of its time, Phyllis was to consider the detection of these 'abnormalities' against the presence of wider stressors (chemical pollutants) inherent in these open marine systems. Descriptions included a novel microsporidian pathogen infecting the musculature and a systemic ciliate pathogen and a systemic dinoflagellate predominantly infecting amphipod taxa within the genera *Ampelisca*, *Monoculodes*, and *Uniciola*.

During her professional career, Dr Johnson was a prolific scientific writer, producing over 100 peer-reviewed scientific publications, many as sole or first author. The current paper collates this bibliography and places them in context with her career transition from terrestrial to aquatic invertebrate pathologist. Her considerable outputs have attracted successful nominations to Fellow of the Washington Academy of Sciences (WAS), the American Association for the Advancement of Science (AAAS) and, the Scientific Research Society (Sigma Xi). Bespoke honors include award of the City of Montpellier Medal for contributions to the study of marine invertebrate pathology and, the US Department of Commerce Bronze Medal (1981). She served on PhD and MA advisory committees at the Universities of Delaware and Maryland and was a Member of the Committee on Animal Models and Genetic Stocks of the National Academy of Sciences. Her professional affiliations span the aforementioned organisations and additionally, include the American Society of Parasitologists, the American Society of Tropical Medicine and Hygiene, the Entomological Society of Washington and the Society of Invertebrate Pathology (SIP). Her contribution to the SIP is particularly noteworthy, serving on the Glossary Committee (1974-1984), the Journal Advisory Committee (1987), the Founders Lecture Committee (1983-1990) and the Membership Committee (1982-1983). She served as Vice President (1979-1980) and President (1980-1982) of the SIP in which she oversaw adoption of Society Bylaws, a revised Constitution and the formation of the Founders Lectureship. Dr Phyllis T. Johnson, a pioneer in aquatic invertebrate pathology is a Charter Member and Honorary Member of the SIP. She lives in Friday Harbor, Washington, USA.

48th Annual Meeting of SIP in Vancouver, Canada August 9 - 13

The great news is that after years of construction, our meeting venue, The Nest at the University of British Columbia, officially opened and we look forward to hosting SIP in this modern and interesting building, only a few hundred meters from Gage Residence.



Some important messages

Book your accommodation! Rooms are in limited supply and staying at Gage Residence is the most convenient option as UBC is somewhat isolated from

the main areas of Vancouver. Also, please register soon! ...to help us with our budgeting (we've noticed that many speakers have not yet registered or booked their accommodation).

New to SIP will be the use of a program-scheduling application for smart phones, tablets, and computers. We selected the app EventMobi to provide this service. Please type www.EventMobi.com/SIP2015 into the address bar (not the search bar) of any e-device. For mobile devices, you will be prompted to download the app. For computers, it will run directly from the website. Meeting content will appear as we upload it.

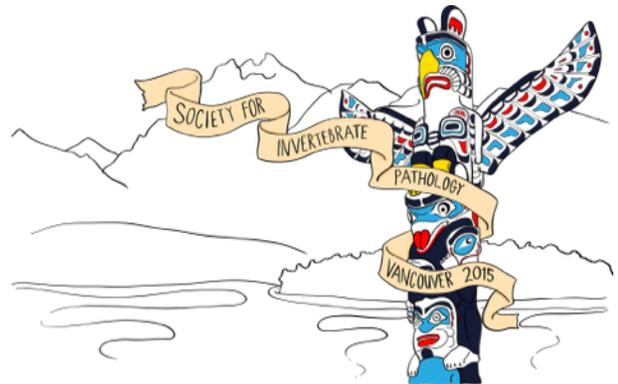
The meeting program will also be available from the website as a free downloadable and printable PDF (<http://www.sipmeeting-2015.org/scientific-program/>). In the registration pages, we offer the option to purchase a hard copy program book that you can pick up when you arrive at the meeting (you must pre-order it on from the Registration form at www.sipmeeting-2015.org).

Lunches will be 'on your own' at one of the numerous restaurants in The Nest or nearby on campus. Those traveling by bus to an excursion will be provided lunch on the bus.

Formats for posters and oral presentation of contributed papers

Poster boards are cork, with push pins supplied. Your poster should be no larger than 117 cm X 117 cm (46 in X 46 in). Posters will be available for viewing during the entire conference. Oral presentation of contributed papers should be 12 minutes with 3 minutes for questions, or a total of 15 minutes.

If you have any questions, or need assistance of any kind, contact us: SIP2015Enquiries@gmail.com
We look forward to seeing you in Vancouver!



The SIP2015 Organizing Committee. Jenny Cory (Scientific Program), Beth McCannel (Committee Member), Todd Kabaluk (Meeting Co-Chair), David Theilmann (Treasurer), Deborah Henderson (Social Program), Mark Goettel (Meeting Co-Chair), Alida Janmaat (Scientific Program & Volunteer Organizer), and Joan Cossentine (Registration).

48th Annual Meeting of SIP in Vancouver, Canada Scientific Program

FOUNDERS' LECTURE

Presented by *Jim Bechnel*

Grant Stentiford in Honor of Phyllis T. Johnson

Phyllis T. Johnson – Pioneer of marine invertebrate pathology

PLENARY SYMPOSIUM

Insect Pathogens in Nature: Ecology and Evolution

- “How sea stars get wasted: evidence of a viral etiology and host response to sea star wasting disease” *Colleen A. Burge (University of Maryland)*
- “Symbiont-mediated defense against parasitic nematodes in *Drosophila*” *Steve J. Perlman (University of Victoria)*
- “No nematode is an island: interactions between entomopathogenic nematodes and other organisms” *Christine T. Griffin (Maynooth University)*
- “The ecology of virulence in insect associated bacteria: field experiments and experimental evolution” *Ben Raymond (Imperial College)*

DIVISIONAL SYMPOSIA

Bacteria Division

Mechanisms of Field Resistance to Bt Pesticides and Bt Crops

Organizer: *Juan Luis Jurat-Fuentes*

- “Bt resistance in *Plutella* – too many trees?” *Neil Crickmore (University of Sussex)*
- “Resistance of cabbage loopers to Dipel” *Ping Wang (Cornell University)*
- “Pink bollworm resistance to Bt cotton: similar mechanisms in the lab and the field” *Jeff Fabrick (United States Department of Agriculture)*
- “Mechanism of *Spodoptera frugiperda* resistance to Cry1Fa in Bt corn” *Juan Luis Jurat-Fuentes (University of Tennessee)*
- “Characterization of potential resistance mechanisms to Cry4Bb in western corn rootworm” *Jeff Haas (Monsanto Company)*

Microbial Control Division

Synergies Enabling the Registration and Adoption of Biological Pest Controls – the Role of Governments, and Academic Programmes, and Industry

Organizer: *Tobias Laengle*

- “Facilitating the registration and adoption of biological pest controls in Canada?” *Tobias Laengle (Agriculture and Agri-Food Canada)*
- “Registration and adoption of biopesticides through the IR-4 Project” *Bill Barney (United States Department of Agriculture)*
- “How does academia contribute to registration and adoption of biological control agents – a European perspective” *Jørgen Eilenberg (University of Copenhagen)*
- “Perils and pitfalls of product development and commercialization: an industry perspective” *Randy Martin (Valent BioSciences)*

Vancouver is warm in comfortable in August!

Average high temperature is 23°C and low temperature is 12°C. It is typically sunny, but can be cool in the surrounding mountains; bring a light jacket.

Fungi Division

Endophytic Entomopathogenic Fungi: “Probiotic” Microbial Associates of Plants?

Organizers: *Don Roberts and Ray St. Leger*

- “Endophytic entomopathogenic fungi as “plant probiotics”: an important tool in protecting and promoting plant health?” *Chad Keyser (Utah State University)*
- “Entomopathogenic fungi as endophytes: interactions with host plants and herbivores” *Stefan Vidal (Georg August University)*
- “Trading insect nitrogen for photosynthate: carbon translocation from a plant to an insect pathogenic, endophytic fungus” *Michael J. Bidochka (Brock University)*
- “Metarhizium as a multifactorial plant growth promoter” *Raymond St. Leger (University of Maryland)*

Nematode Division

Recent Advances in Entomopathogenic Nematode Infection Behavior: Inside and Outside

Organizers: *David Shapiro-Ilan and Ed Lewis*

- “Advances in entomopathogenic nematode dispersal and host-finding behavior” *David Shapiro-Ilan (United States Department of Agriculture)*
- “Sex, age and following the leader drive infection dynamics of entomopathogenic nematodes” *Ed Lewis (University of California, Davis)*
- “Impact of infection behavior on lethal male fighting in *Steinernema*” *Christine Griffin (Maynooth University)*
- “The stability of virulence in insect parasitic nematodes is determined by social interactions” *Ben Raymond (Imperial College)*

Virus Division

Advances in Host and Insect Virus Genomics

Organizers: *David Theilmann and Martin Erlandson*

- “Macro- and Micro-evolutionary trends in baculoviruses” *Johannes Jehle (Julius Kuehn Institute)*
- “Alphabaculoviruses: host transcriptome responses to infection” *Gary Blissard (Cornell University)*
- “Polydnviruses: from discovery to current insights” *Michael Strand (University of Georgia)*
- “Dicistrovirus – hijacking the host translational machinery” *Eric Jan (University of British Columbia)*
- “Insect metagenomics-based discovery of novel, small RNA viral genomes” *Sijun Liu (Iowa State University)*

CROSS DIVISIONAL SYMPOSIUM

Microsporidia and Diseases of Beneficial Invertebrates

Microsporidia as Emerging Pathogens

Organizers: *Kelly Bateman and Susan Bjornson*

- “The complex relationship between microsporidia and fungi” *Patrick Keeling (University of British Columbia)*
- “Fish microsporidians: emerging pathogens or emerging knowledge?” *Mark Freeman (University of Iceland)*
- “Understanding phylogenetic relationships among species in the *Nosema/Vairimorpha* clade: What does genetic similarity say about host switching in the microsporidia?” *Wei-Fone Huang (University of Illinois)*
- “Emergent pathogens of invertebrates: environmental sampling to identify novel parasite lineages” *Bryony Williams (University of Exeter)*
- “Investigations into the composition of the microsporidian polar tube” *Louis M. Weiss (Albert Einstein College of Medicine)*

Fungi and Microbial Control

The (underestimated) Value of Applied Research: Moving the Theoretical to the Practical

Organisers: *Travis Glare, Michael Brownbridge and Roma Gwynn*

- “Why biopesticides sometimes fail” *Roma Gwynn, Michael Brownbridge, Travis Glare (Rationale Ltd., Vineland Research and Innovation Centre, Lincoln University)*
- “Multiple roles so what should we measure? An ecological approach to promote the contribution of fungal entomopathogens in pest management within the agro-ecosystem” *Nikolai Meyling (University of Copenhagen)*
- “Research and development of biological crop protection products” *Reed Royalty and Denise Manker (Bayer CropScience)*
- “Adapting field trials for microorganisms – in practice” *Edith Ladurner, Massimo Benuzzi, Sergio Franceschini (CBC/BioGard)*
- “How do we improve efficacy monitoring of biopesticides?” *Travis Glare, Michael Brownbridge, Roma Gwynn*

Nematode and Bacteria

Intracellular Responses to Bacteria and Bacterial Toxins

Organizers: *Raffi Aroian and Patricia Stock*

- “Insecticidal action, cellular interactions and responses of combinations of *Photorhabdus*-insect-related (Pir) and *Bacillus thuringiensis* crystal (Cry) toxins” *Anais Castagnola (University of Arizona)*
- “Response to Cry1Ac intoxication in midgut cells of *Heliothis virescens* larvae” *Juan Luis Jurat-Fuentes (University of Tennessee)*
- “Syringe-like injection mechanism of bacterial ABC toxins revealed in molecular detail” *Christos Gatsogiannis (Max Planck Institute)*
- “*Caenorhabditis elegans* nck-1 plays a distinct and specific role in defense against bacterial pore-forming toxins” *Anand Sitaram (University of Massachusetts)*
- “The cell biology of *Wolbachia* foliar nematode interactions and the dark side of symbiosis?” *William Sullivan (University of California)*
- “*Photorhabdus*: light without heat?” *Nicholas Waterfield (Warwick University)*

WORKSHOPS

Bacteria Division

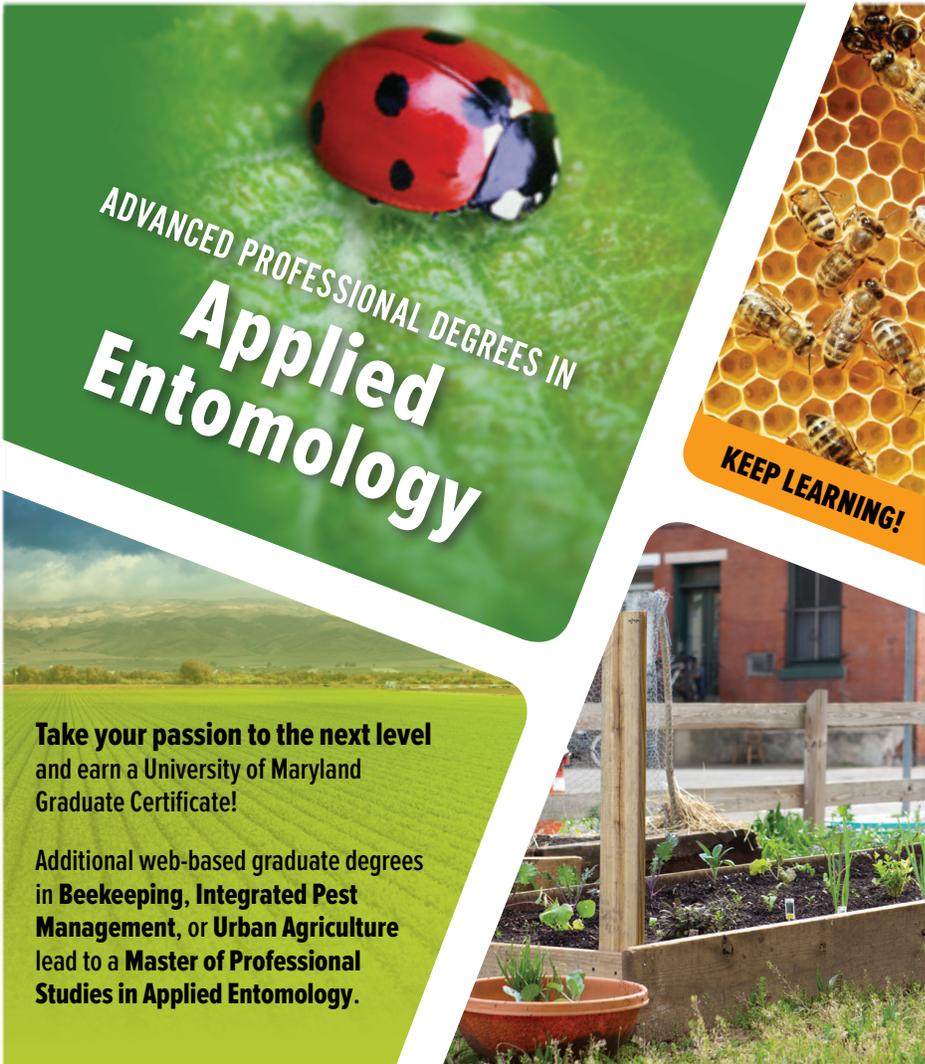
Regulatory Considerations for the Commercialization of New Insecticidal Proteins

- “Current insights on Bt insecticidal protein specificity and future directions” *Juan Luis Jurat-Fuentes, Neil Crickmore (University of Tennessee, University of Sussex)*
- “Proteins 101: structure, function, and evolution” *Joe Jez (Washington University)*
- “Protein sequences, structures and functions – rules for divergence and rules for conservation” *Adam Godzik (Sanford-Burnham Medical Research Institute)*
- “Modelling of insecticidal toxins and their potential interactions: challenges and aspirations” *Colin Berry, Neil Crickmore (Cardiff University, University of Sussex)*
- “Safety considerations derived from Cry34/35Ab1 structure and function” *Kenneth E. Narva, Nick Storer, Rod Herman (Dow AgroSciences)*
- “Case study of a novel wCRW insecticidal protein from *Chromobacterium* sp.” *Kimberly Sampson, Laura Schouten, Jelena Zaitseva, Deepa Balasubramanian (Bayer CropScience)*
- “Biochemical characterization of parasporin-4 and effects of the pro-parasporin-4 diet on the health of mice” *Shiro Okumura, Hironori Koga, Kuniyo Inouye, Eiichi Mizuki (Fukuoka Industrial Technology Centre, Jurume University, Kyoto University)*
- “Considerations for the safety assessment of novel insect control proteins: a regulatory perspective” *Phil MacDonald (Canadian Food Inspection Agency)*
- “New insecticidal proteins: optimization and specificity” *Silvanovich, Yong Yin, Dave Bowen, Kevin Glenn, Adam Evans (Monsanto Company)*

Announcements

Postdoctoral Position Available

Position available immediately for a Postdoctoral fellow to work on baculovirus molecular biology, particularly on the role of baculovirus genes such as me53. The successful applicant will have experience in baculovirus molecular biology, be able to do independent research and help advise one or two students. If interested please send a complete CV and the names of three referees to Dr. Peter Krell, Molecular and Cellular Biology, University of Guelph, Guelph, Ontario, Canada at pkrell@uoguelph.ca.



ADVANCED PROFESSIONAL DEGREES IN
Applied Entomology

KEEP LEARNING!

Take your passion to the next level
and earn a University of Maryland
Graduate Certificate!

Additional web-based graduate degrees
in **Beekeeping, Integrated Pest
Management, or Urban Agriculture**
lead to a **Master of Professional
Studies in Applied Entomology.**

 VISIT: oes-entm.umd.edu

Office of Extended Studies
Keep Learning | oes.umd.edu
UNIVERSITY OF MARYLAND

Memories from the SIP Meeting in Mainz



Lee Solter, Mary Barbercheck, and Ann Hajek enjoying the breeze along the river



Selcuk Hazir and Family enjoying a stroll through Mainz



Johannes Jehle and his team making it happen!



Peter Krell making a strong 5K push!



Daniela Pilarska and Surendra Dara enjoying the Mainz experience



Renate Radek, Daniela Pilarska, and Manana Kereselidze distracted from the last glass of wine