



Society for Invertebrate Pathology Newsletter

Volume 47 Issue 3

December, 2014



**Looking forward to the
48th Annual Meeting of the Society for Invertebrate Pathology,
August 9-13, 2014 in Vancouver, Canada**

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**From the President**

Dear SIP Colleagues,

As this is my initial "From the President" I would first like to express my appreciation in having been given your trust as your President. I am humbled to be selected to take on the reins of the SIP for the next two years, though I accept my responsibility as President with trepidation.



Nevertheless I am reassured that a very supportive and talented SIP Council, Divisions and Committees will be there for you as well. I would like to publicly acknowledge the efforts of Jørgen Eilenberg, your former President. Through his able stewardship of the SIP over the last two years, I learned how to consult widely and be decisive. I am grateful that Jørgen will remain as Past President so I can solicit his sage advice and in depth knowledge of Robert's Rules of Order. Outgoing Past President Lee Solter will be sorely missed. She provided wise counsel, institutional memory and provided a sense of order. Treasurer Kelli Hoover was instrumental in keeping our budgets in order and decipherable, she has agreed to help the new Treasurer (thanks Kelli). Secretary Patricia Stock made sure we were organized, held our meetings on time and provided the documentation needed. The outgoing trustees Juan Luis Jurat-Fuentes and Regina Kleespies and the Division Chairs ensured we had spirited discussions. I learned a lot watching the previous council in action. Jørgen and trustees Surendra Dara and Ed Lewis remain on Council and will ensure continuity and provide institutional memory for your Council. I look forward to working with them and new council members: Johannes Jehle as Vice President, Mary Barbercheck as Secretary, Stefan Jaronski as Treasurer and the two additional Trustees Monique van Oers and Albrecht Koppenhofer. I am grateful that we can also count on the seven Division Chairs and various Committees and Newsletter editor Eric Haas-Stapleton and Web editor Lee Solter, along with the excellent talents of Cecilia Schmidt who serves as our SIP secretariat. All will collectively help ensure that your SIP will run smoothly over the next two years.

Wunderbar, Toll (not the innate immunity "toll") are two words that readily spring to mind in my recollection of the SIP 2014 Mainz meeting this past August. For those who attended, you know what I mean, for those unable to attend, you missed a great meeting. What other society is greeted at the airport with directions to the trains and bus passes and whose members, at

their annual banquet, are graced by the presence of a Princess, in this case Joelle Ohler this year's Pallatinate Wein Princess? We can all thank Johannes Jehle, former SIP Secretary and current Vice President and Chair of the Mainz Organizing Committee for ensuring an exceptional scientific program, a challenging (uphill) 5K race, and as with all SIP conferences, exciting venues, excursions, activities and cuisine. At the BBQ, you may have noticed that SIP now has its own flag (see cover page), which can be passed from one meeting Chair to the next, just like in the Olympics. Johannes emphasized that he did not work alone and I would like to thank Thomas Henkeln, Elke Genersch, Andreas Linde, Regina Kleespies, Katharina Saar and Dietrich Stephan and many others in the SIP 2014 Mannschaft for their responsiveness, organizational skills and good humour throughout. As always I was struck by the high quality of the student presentations. Though not all are recognized among the 2014 Student Award Winners in this Newsletter, all of the student presenters are winners. They are the future of our society; we need to keep them engaged in the discipline and in SIP. At the banquet I was pleased to share the head table, not only with the Wein Princess and my wife Éva Nagy, but also with Trevor Jackson, my long time 5K running rival, who gave the Founders' Lecture honoring the work of Alois Huger. Nevertheless the saddest part of SIP 2014 was saying *Auf Wiedersehn*. But, the upside is that "Wiedersehen", means we will see you again. That is the nature of the SIP. With the closing of every Conference and the associated memories, we also look forward to the one just around the corner, in this case Vancouver, Canada (home to the Winter Olympics, 2010) August 9 to 13, 2015 when the SIP family can meet again. Hope to see you there.

As this was my first "From the President" I sought inspiration from those of Past Presidents. Reading through their previous missives, I was reminded of the many positive elements of the SIP, but also some

challenges that SIP has faced and continues to face, including maintaining membership numbers and revenue. However I was also struck by the tremendous resilience and optimism for the society expressed by previous Presidents, along with the commitment of the ongoing sundry Divisions, Committees and various Chairs to move the society forward. With every challenge comes a solution, such as the special efforts of the Membership Committee (Chair Nina Jenkins) to maintain and attract members and the Endowment and Financial Support Committee (Chair Roma Gwynn) to increase revenue. We all owe all committees a note of thanks. Of course it is our annual meeting which is the mainstay of the SIP and the reason many of us are members or became members. In addition to discussing leading edge science, establishing international collaborations and getting together as a family, these annual meetings also help to expose the SIP brand, increase membership and provide a source of revenue to continue to host these meetings.

Which brings me to my final point today, it is time to renew your membership or for those of you not yet members to consider joining SIP. You will be getting another, friendly, reminder shortly. With an annual fee of only \$45 for regular members and a reduced fee of \$20 for students, this is a real bargain with many benefits, including lower meetings fees. Consider encouraging others to join, or even offer to pay the fees yourself, especially for your students and other trainees. From my perspective, the SIP is in capable hands and its future looks good.



SIP 2015 in Vancouver, British Columbia, Canada

The SIP 2015 Meetings Organizing Committee is pleased to invite you to Vancouver, B.C., Canada for the International Congress on Invertebrate Pathology and Microbial Control and the 48th Annual Meetings of the Society for Invertebrate Pathology to be held 9-13 August, 2015 at the University of British Columbia Campus. Excellent accommodations will be available on campus at economical prices. Vancouver is ideally located halfway between Asia and Europe serviced by major airlines. It is a vibrant multi-cultural city with many pre and post conference opportunities from city nightlife to Canada's wilderness.

A Meetings Website will be launched in early 2015. In the meantime, if you have any queries, please contact us.

Todd Kabaluk: Todd.Kabaluk@AGR.GC.CA

Mark Goettel: Bstedit@telusplanet.net



SIP 2015 Meetings Organizing Committee recently toured the meeting facilities on the UBC campus in Vancouver which are in the final stages of construction!

2014 Student Award Winners

Mauro Martignoni Award to Aurelien Chateigner

Title: Genomic adaptation to different hosts – Impact of genetic diversity on viral fitness.

Aurélien Chateigner is a PhD student working at the University of Tours (France) in the lab of Dr. Elisabeth Herniou, mixing molecular biology learned at the University of Orléans (France) and intensive computation experienced at University of Cambridge (United Kingdom) to study the influence of the environment on the evolution of virus genomes. His research involves directing the evolution of a wildtype strain of AcMNPV in several host species and studying the resulting phenotype and genotype. His goal is to understand the genetic changes that permit adaptation of a virus population to a particular host and the maintenance of a generalist potential. He was awarded a student travel award by the Virus Division of SIP (2012 and 2013) and 1st place for the Poster Presentation Award for SIP in 2013. In addition to serving as the Student Representative for the Virus Division of SIP, he is supervising Masters degree and two-year technical degree students.



Monique van Oers presenting the Martignoni Award to Aurelien Chateigner

Chris J. Lomer Award to Dr. Govind Gujar

Title: Evaluation of culture media for maximal growth, Cry toxin production and insecticidal toxicity of *Bacillus thuringiensis*

Dr. Gujar is a Head Scientist with the Indian Council of Agricultural Research in New Delhi, India. The research interests of his group are focused on *Bt* resistance management, and the mode of action for natural products such as new isolates of *Bacillus thuringiensis*, neem and plumbagin. More recently, his research group has initiated studies of insect immunity and to identify molecular markers to identify pest species. The overall goal of his research is to enhance sustainable approaches in crop protection. Funding for this research comes from the Indian Council of Agricultural Research, Syngenta and the Australian-India Strategic Research Fund (total of Rs.14.6 million). He has authored over 77 research articles. In addition to mentoring postdoctoral scholars and graduate student (Master's and Ph.D), Dr. Gujar teaches advanced courses in the Biochemistry of Insecticides and Insect Physiology at the Post-graduate School of the Indian Agricultural Research Institute, India's premier institution in the field of agricultural research.



Patricia Stock presents the Chris J. Lomer Award to Dr. Govind Gujar



1st: Oral Presentation Award to Chad Keyser

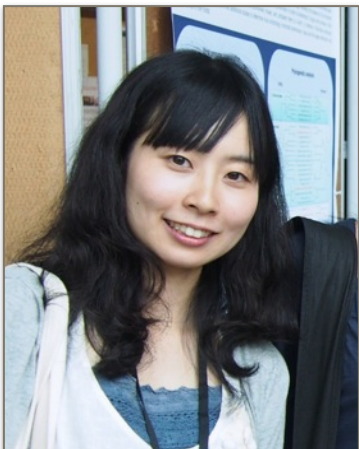
Title: Interactions between the insect pathogenic fungus *Metarhizium*, the wheat pathogen *Fusarium culmorum* and the mycoparasitic fungus *Clonostachys rosea*

Chad Keyser is currently a PhD student at the University of Copenhagen in Denmark. His research project, directed by Nicolai Meyling, investigates how *Metarhizium* spp. isolates interact with plant roots, other important fungi and insects associated with these roots. In 2010 Chad completed a Master's degree from Utah State University where he worked with Donald Roberts in developing a laboratory based selection process for identifying promising fungal biological control agents. As an undergraduate Chad took a summer job as a lab and field assistant in an insect pathology lab where he quickly became fascinated by the complex interaction between pathogen and host; he is thrilled to have the opportunity to continue his education in this area and looks forward to a career in biological control.

1st: Oral Presentation Award to Graham Thomas

Title: Characterizing putative virulence factors of the bee pathogen *Nosema ceranae*

Graham Thomas is a PhD student in the department of Biosciences at the University of Exeter, supervised by Prof. Ken Haynes. He earned a Biology BSc (Honours) from the University of Portsmouth and a masters degree from the University of Plymouth where he developed a passion for host pathogen interactions and produced a cell synchronization assay for the brown algae, *Ectocarpus siliculosus*, to aid studies on the latent phaeovirus EsV-1. This passion continues with his doctoral studies addressing the question of molecular mechanisms of pathogenicity for the microsporidian *Nosema ceranae*. To achieve this he uses heterologous expression of candidate virulence factors in the model eukaryote *Saccharomyces cerevisiae* for functional characterization. The project aims to increase fundamental knowledge of nosemosis and so move towards disease mitigation.



1st: Poster Presentation Award to Shiori Sagawa.

Title: Larvicidal activity of an ascovirus from *Spodoptera litura* against parasitoid wasps.

Shiori Sgawa is a 2nd year Masters student at Tokyo University of Agriculture and Technology (Japan), studying under Dr. Madoka Nakai, Dr. Yasuhisa Kunimi and Dr. Maki Inoue. Her research is to use molecular approaches to understand the effects of an ascovirus (Japanese isolate) parasitoid killer toxin on the larvae of *Spodoptera litura*. Next year, she will begin work in a corporate setting to produce chemical and biological pesticides in Japan.

2nd: Poster Presentation Award to Maissa Chakroun.

Title: *In vivo* and *in vitro* binding of Vip3Aa to *Spodoptera frugiperda* midgut and characterization of binding sites using ^{125}I -radiolabeling. Maissa Chakroun earned her BSc. in life sciences and her MSc. in cellular and molecular biology, both with distinction, from Sfax University, Tunisia. She earned a masters degree studying the mode of action for *Bacillus thuringiensis* Cry proteins at the Sfax Biotechnology Centre in collaboration with the Faculty of Sciences in Sfax University. She was awarded a fellowship by the Spanish government to do her PhD in the Laboratory of Juan Ferré at the University of Valencia where she has been investigating the *B. thuringiensis* Vip3 proteins mode of action. Now she is working on related topics in the *Bt* toxins mode of action in the University of Valencia as researcher while finishing writing her thesis. She is looking forward to finding a post doctoral position to sharpen her career in the field of biological control.



3rd: Oral Presentation Award to Anto Raja Dominic.

Title: Temporal trends and the effect of seasonal temperature on the prevalence of *Nosema* spp. in *Apis mellifera* in north-east Germany. Anto earned a Bachelor's degree in Zoology, Loyola College, India and a Master's in Environmental Information Technology, HNEE, Eberswalde, Germany. He evaluated forest fire risk models for Germany in his Masters thesis, carried out at the Potsdam Institute for Climate Impact Research, Germany (PIK). He continued research as a programmer at PIK to calculate emission pathways for future climate scenarios. In 2012, he began work on a PhD to model the effect of weather on *Nosema* spp. prevalence in honeybees. This is providing him the opportunity to combine interests in ecology with recently acquired skills in data analysis and modeling.

3rd: Oral Presentation Award to Alicia Elhigazi.

Title: Which regions of the Bt Cry41Aa toxin are responsible for its activity against human cancer cells?

Alicia was initially inspired to research when she took part in a summer program in Sudan while studying at Queen Mary University, London. After graduating, she worked at the microbiology lab in Hammersmith Hospital, London before she embarked on a post graduate course in education at the University of Exeter. It was at this stage that she felt the need to return to science and joined Dr. Crickmore's lab at the University of Sussex as a MSc student. She was excited to begin work on a newfound type of Cry toxin that targets some cancer cell lines and sought to discover the functional domains that impart toxicity. She feels this research may have fantastic impacts on *Bt* biopesticides and on the global problem of cancer. She decided to continue research as a PhD student in the same lab where she has so far constructed point mutants that inactivate the Cry toxin. Her ultimate goal is to transfer the activity she discovers in human cancer cells to an insecticidal Cry toxin and shed light on the domains that are responsible for toxin specificity.





3rd: Poster Presentation Award to Haruaki Uchida.

Title: Comparative fitness of a granulovirus mutant possessing larger occlusion bodies than wild type *Adoxophyes orana* granulovirus.

Haruaki Uchida is a Masters student at Tokyo University of Agriculture and Technology, Japan in lab of Dr. Madoka Nakai and Dr. Yasuhisa Kunimi. He studies a mutant of *Adoxophyes orana* granulovirus isolated from a tea field in Japan. The mutant produces cube-shaped occlusion bodies (OB) that are 0.5 - 2 μ m in diameter whereas wild type GV produces typical ellipsoidal OB of approximately 0.5 μ m in length. He focused on the fitness of the mutant, and compared virulence, viral production, and UV tolerance of both isolates.

Student Travel Award Winners

Nematode Division

John G McMullen II, Univ. of Arizona, USA

Dana Blackburn Brigham Young University, USA

Virus Division

Laila Gasmi, Universitat València, Spain

Siddhartha Biswas University of British Columbia, Canada

Germaine Chevignon, University of Tours, France

Bacteria Division

Peter Kupferschmied, University of Lausanne, Switzerland

Igor Iatsenko, Max Planck Institute for Developmental Biology, Tübingen, Germany

Microsporidia Division

Dominic Wiredu Boakye, University of Exeter, UK

Diseases of Beneficial Invertebrates Division

Birte Arlt, Institute for Bee Research, Hohendorf, Germany

Lauren Hall, University of Southampton, UK

Fungi Division

Chad A. Keyser, University of Copenhagen, Denmark

Sandra Aragon, Georg-August-Universität Göttingen, Germany, and the Colombian Corporation for Agricultural Research

Microbial Control Division

Candice Anne Coombes, Rhodes University, Grahamstown, South Africa

Naworaj Acharya, Penn State University, USA

Founders' Lecture in 2014



Alois Huger, the Founders' Honoree



Trevor Jackson, the Founders' Lecturer



Trevor Jackson introducing the biography of Dr. Alois Huger to the members of SIP during the Plenary Session



Chair of the Founders' Lecture Committee, James Becnel (right), Jørgen Eilenberg, President of SIP and Trevor Jackson (left), the Founders' Lecturer present the award to Alois Huger, the Founders' Honoree

SIP Council for 2013-2014



SIP Council Meeting for 2014. Left to right: (Front) Leellen Solter, Regina Kleespies, Surendra Dara, Helen Hesketh, Lorena Passarelli, Patricia Stock, and Kelli Hoover; (Second) Baltasar Escriche, Ed Lewis, Peter Krell, Juan Luis Jurat-Fuentes, and Jørgen Eilenberg



If we have the meeting
in the elevator, it's
guaranteed to be uplifting



The 5K Race at the 2014 Mainz, Germany Meeting



The field assembles, they mull over the intensity of the incline, obstacles to be faced, excellent showers and BBQ waiting at the end of the grueling course!



Mark Goettel and Peter Krell revving up or winding down... only the sweat will tell.



Everyone stop at the field to collect your favorite microbe or pathogen!



and the winners are.....

Winners of the 5K Race with time to finish (min)

Women runners under 50: Maria Elena Mura (23:33), Tarryn Anne Goble (25:38), and Johanna Mayerhofer (29:19).

Men runners under 50: Hannes Rauch (22:41), Clement Gilbert (24:54), and Nicolai Meyling (25:11).

Women runners over 50: Jane Theilmann (28:47), Bryony Bonning (32:36), and Madoka Nakai (40:10).

Men runners over 50: Neil Crickmore (23:08), Kenneth Narva (25:30), and Jürg Enkerli (26:10).

Women walkers: Anne Karpinski (48:53), Ann Hajek (48:54), and Karen Toohey (49:20).

Men walkers: Surendra Dara (46:10), Mark Goettel (49:19), and Siddhartha Biswas (50:47).



Winning women walkers chuckling over the ease of the course



The lead walkers take the stage ready to bow, if only to stretch the legs



The winning runners recovered from the ordeal and ready for dessert!

Dr. Jiří Vávra Wins Prestigious Award



Dr. Jiří Vávra is the recipient of a prestigious award presented by the Rector of the University of South Bohemia in Ceske Budejovice, Czech Republic, for "The Publication of the Year 2013 in Biological Science". The paper "Microsporidia and the Art of Living Together", co-authored with **Julius Lukeš** and published in the book series *Advances in Parasitology* (2013, 82: 253-319), is the culmination of a life's work and dedication to the microsporidia. The Vávra laboratory pioneered modern studies on microsporidian biology and has presented a fresh and provocative review with new insights and perspectives on "The Master Parasites". Perhaps no other research group has the depth of experience and training to relate classical knowledge about the microsporidia with the rapidly expanding knowledge of microsporidian genomes and gene function.

The authors present an excellent overview of the relationships between microsporidia and fungi and adaptations to an obligate intracellular existence, as well as highlighting many interesting and poorly known features of microsporidian biology. The review is highly relevant to experienced microsporidiologists as well as a valuable introduction to parasitologists and biologists who may not be familiar with these remarkable parasites. The article succeeds in capturing the essence of the microsporidia as well as promoting future research directions where this group of organisms can serve as models for understanding the 'Art of Living Together'. This review will endure for many years as a major resource for all researchers who study microsporidia as well as those interested in knowing more about this fascinating group of organisms.

Dr. Vávra has had a long and distinguished career studying parasitic protozoa especially Microsporidia, Apicomplexa, and Myxozoa, as well as opportunistic parasites of humans. He is currently Professor of Parasitology at the University of South Bohemia in Ceske Budejovice, Czech Republic and Professor Emeritus, Department of Parasitology, Faculty of Science, Charles University, Prague, Czech Republic. He has collaborated with many SIP members and remains a mentor and a friend to microsporidiologists globally. Dr. Vávra richly deserves this award for his excellent contribution.

James Becnel and Leellen Solter

Announcements



**LOIS K.
MILLER**

1945-1999

A Biographical Memoir by

*A. LORENA PASSARELLI,
JANET WESTPHELING,
ERIN M. ESPELIE,
AND KARL ESPELIE*

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A biographical memoir of Lois Miller, an insect virologist who succumbed to cancer far too early in her career, was recently published by the National Academy of Sciences. Written by Lorena Passarelli and colleagues, this memoir highlights the career of a scientist who broke gender barriers and made substantial contributions to baculovirus research that are still being pursued and cited by researchers worldwide. This memoir serves as an inspiration to anyone in science, particularly women wanting to understand how a pioneer in molecular biology shaped a discipline. Get the full article here:

<http://www.nasonline.org/publications/biographical-memoirs/memoir-pdfs/miller-lois.pdf>

Highlights in Invertebrate Pathology

Beginning at the 2013 SIP Annual Meeting in Pittsburgh, we began hosting “Research Highlights in Invertebrate Pathology” during the Business Meeting . These highlights represent topics from the previous year of exceptional scientific contributions, industrial advances, or other noteworthy accomplishments as judged by the seven divisions. It became the responsibility of the Vice President and the Chair of one of the Divisions to choose and collate the suggestions and to make the presentations during the business meetings.

Below, belatedly, is a summary of the Research Highlights in Invertebrate Pathology for SIP 2013, Pittsburgh, communicated by the Division Chairs, and presented by Peter Krell and Stefan Jaronski followed by those for SIP 2014, Mainz presented by Peter Krell. This information was provided by Peter Krell, please contact him to correct any errors.

The Power Point Presentations that were displayed will be soon posted to the SIP Web Site.

Invertebrate Pathology Highlights 2012-2013 (in alphabetical order)

Bacteria (communicated by Juan Luis Jurat-Fuentes)

S Atsumi et al on Developing resistance to Bt toxin, in PNAS **109**:1591-598 (doi: 10.1073/pnas.1120698109) and NP Chougule et al on Retargeting Bt toxin in PNAS **110**:8465-8470 (doi: 10.1073/pnas.1222144110).

Diseases of Beneficial Insects (communicated by Grant Stentiford)

L Tran et al on Agent of shrimp early mortality syndrome, in Journal of Aquatic Organisms **105**:45-55 (doi:10.3354/dao02621).

Fungi (communicated by Helen Hesketh)

SW Behie et al on Endophytic fungi translocate nitrogen from insects to plants, in Science **336**:1576-1577 (doi: 10.1126/science.1222289.), G. Xiao et al on Genomic perspectives of *Beauveria bassiana* evolution in Nature Scientific Reports **2**, article number 483 (doi:10.1038/srep00483) and from the entertainment front, Cordyceps fungi as inspiration for horror video game (<http://www.npr.org/2013/07/09/199040676/a-zombie-horror-game-inspired-by-a-nature-documentary>). Note: SW Behie was the 2013 SIP Mauro Martignoni winner.

Microbial Control (communicated by Stefan Jaronski)

Commercialization of *Chromobacterium subsugae* for insect control, in http://www.epa.gov/pesticides/chem_search/reg_actions/registration/fs_PC-016329_20-Aug-12.pdf *

Microsporidia (communicated by Carlos Lange)

WF Huang et al on Fumagillin antibiotic exacerbates rather than suppresses *N. ceranae* infection, in PLoS Pathogens **9**:e1003185 (doi: 10.1371/journal.ppat.1003185).

Nematodes (communicated by Selcuk Hazir, Chair, Nematodes Division)

C Gatsogiannis et al *Photorhabdus* toxin inserts like a syringe, in Nature **495**:520-523 (doi: 10.1038/nature11987) and D Toubarro on What makes a nematode parasite an entomopathogen?, in PLoS Pathogens **8**:1-4 (doi: 10.1371/journal.pone.0069161).

Viruses (communicated by Lorena Passarelli)

YR Chen et al on AcMNPV transcriptome in Journal of Virology **87**:6391-6405 (doi: 10.1128/JVI.00194-13), T Burke et al on Polydnavirus proteins conserved in baculoviruses and nudiviruses in PLoS Pathogens. 2013. **9**:e1003348 (doi: 10.1016/j.coviro.2013.06.004) and on the commercial front, Flublok approved (<http://www.flublok.com>)*.

Invertebrate Pathology Highlights 2013-2014 (in order of increasing biological size)

Viruses (communicated by Lorena Passarelli)

B Goic et al on Host derived viral RNAi assists in viral persistence in *Nature Immunology* **14**:396-403 (doi: 10.1038/ni.2542).

Bacteria (communicated by Baltasar Esriche)

AJ Gassman et al on Field resistance to Bt toxins in 2014 *PNAS* **111**:5141-5146 (doi: 10.1073/pnas.1317179111).

Fungi (communicated by Helen Hesketh)

E Quesada-Moraga et al on Vertical transmission of *Beauveria bassiana* in Opium poppy in *PLoS One* **9**:e89278 (doi: 10.1371/journal.pone.0089278) and LR Jaber and NM Salem on *Beauveria bassiana* protects against squash plant viruses in *Biocontrol Science and Technology* **24**:1096-1109 (doi: 10.1080/09583157.2014.923379) and in SIP 2014, Poster #236.

Microsporidia (communicated by Carlos Lange)

IV Senderskiy et al on Microsporidial secreted proteins control host development and metabolism in *PLoS ONE* **9**:e93585 (doi: 10.1371/journal.pone.0093585) and D Corsaro on A possible fungal lineage between Microsporidia and Nematodes in *Parasitol Res* **113**:1909-1918 (doi: 10.1007/s00436-014-3838-4).

Nematodes (communicated by Selcuk Hazir)

NR Annemie et al on Male male fighting in nematodes in *PLoS ONE* **9**:e89385 (DOI: 10.1371/journal.pone.0089385) and MJ Taylor et al on Discovery and development of anti Wolbachia drugs to treat nematode filariasis (sponsored by the Anti Wolbachia Consortium A-WOL) in *Parasitology* **141**:119-127. (doi: 10.1017/S0031182013001108).

Diseases of Beneficial Insects (communicated by Elke Genersch)

LA Garibaldi et al on importance of wild pollinators in fruit set in *Science* **339**:1608-16-111 (doi: 10.1126/science.1230200) and MA Fürst on spread of high impact pathogens among sympatric pollinators in *Nature* **506**:364-366 (doi: 10.1038/nature12977).

Microbial Control (communicated by Stefan Jaronski)

Marrone Bio Innovations on Commercialization of Burkholderia based Venerate* (<http://www.marronebioinnovations.com/products/brand/venerate>) and EPA approves Bt formulations* for beetleGONE! (EPA No. 88347-3), grubGone! (EPA No 88347-20) and boreGone! (EPA No. 88347-1).

*Note, inclusion of names and links to any commercial products in these Highlights section does not constitute an endorsement of any of them.

Thank you for the photos!

I would like to thank all of the SIP members and friends that have provided photographs over the past year to be included in the newsletters. Special thanks to Peter Krell, Leellen Solter, Surendra Dara, Thomas Guthmann, Mark Goettel, Johannes Jehle, and Lorena Passarelli for sending more than a few great snaps!

-Eric Haas-Stapleton

SIP in Mainz, 2014



Govind Guhar and Aurelien Chateiger looking pleased with receiving the top SIP awards for 2014



SIP members looking to entering the Castle for the BBQ



Cog railway—
all
aboard
and
going up!



Virus Division 2014. That's a lot of new and familiar friendly faces!

© Thomas Guthmann - <http://www.thomasguthmann.de>



Two Past Presidents, Jørgen Eilenberg and Leellen Solter, out for a strøll



Johannes Jehle opening the meeting. Three cheers to him and his team for organizing an outstanding meeting!



Grant Stentiford and Jimmy Becnel enjoying some pleasant banter along the river



Rose Hu and Wang Manli full of cheer as they breeze down the river



Rich Humber and Mañana Kereselidze on the river cruise



Ingebord Klingen and Jørgen Eilenberg happy to be at the stern of the boat



Jurg Huber in deep grass and thought



Helen Hesketh and Kelly Bateman must be thinking to climb the castle wall to be first in for the BBQ



Daniela Pilarska and Surendra Dara pause their scientific discussions for a quick snap!



Daniela Pilarska and Andreas Linde worked up an appetite during the morning sessions