



6th International *Giardia & Cryptosporidium* Conference

Havana International Conference Center

April 26-28, 2017, Havana Cuba

Local Organizing Committee

Angel A. Escobedo

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6TH INTERNATIONAL Giardia AND Cryptosporidium CONFERENCE PROGRAM

HAVANA INTERNATIONAL CONFERENCE CENTER

| Wednesday 26 th | | Thursday 27 th | | Friday 28 th | |
|----------------------------|---|---------------------------|--|-------------------------|--|
| 9:00-16:00 | Registration | 9:00-16:00 | Registration | 9:00-16:00 | Registration |
| 8:30-9:00 | ROOM 3 Opening Ceremony | 8:30-10:25 | ROOM 3 Molecular epidemiology and typing | 8:30-10:00 | ROOM 3 Cell Biology |
| 9:00-10:30 | ROOM 3 Food and water transmission I | | | 10:00-10:30 | Coffee break |
| 10:30-11:00 | Coffee break | 10:30-11:00 | Coffee break | 10:30-12:00 | ROOM 3 Host parasite interaction I |
| 11:00-12:30 | ROOM 3 Food and water transmission II | 11:00-12:00 | ROOM 3 Clinical aspects and public health | | ROOM 3 Host parasite interaction II |
| 12:30-13:30 | Restaurant "Los Flamboyanes" Lunch | 12:00-13:00 | Restaurant "Los Flamboyanes" Lunch | 12:00-13:30 | Restaurant "Los Flamboyanes" Lunch |
| 13:30-15:00 | ROOM 12 Posters Session I | 13:00-14:30 | ROOM 12 Posters Session II | 13:30-14:30 | ROOM 3 Immune response |
| 15:00-17:00 | ROOM 3 Infection in animals and zoonotic aspects | 14:30-16:00 | ROOM 3 Diagnosis | 14:30-15:30 | ROOM 3 Genomics, transcriptomics and proteomics |
| 17:00-17:45 | ROOM 3 Workshop Water-borne Protozoan Parasites: The Latin America Perspective | 16:00-17:10 | ROOM 3 Treatment | 15:30-17:00 | ROOM 3 "Quick" update and tutorial Crypto DB and GiardiaDB.org – A Tutorial of New Features |
| 18:30 | Restaurant "El BUCAN" Welcome reception | | | 17:00-17:30 | |
| | | | | 18:00 19:00 | Closing Ceremony Gala Dinner Restaurant "El BUCAN" |



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| <p>Wednesday 26th, April</p> <p>Havana International Conference Center</p> <p>ROOM 3</p> | |
| <p>8:30- 9:00</p> | <p>OPENING CEREMONY.</p> <p>WELCOME DR. ANGEL ESCOBEDO</p> |
| <p>9:00-10:30</p> | <p>SESSION: FOOD AND WATER TRANSMISSION I</p> |
| <p>Oral Presentations</p> | <p>Chairs: Ronald Fayer, Panagiotis Karanis</p> |
| <p>9:00-9:30</p> | <p>Ronald Fayer, Walter Jakubowski, Simone Caccio, George D. DiGiovanni, Joan Rose KN-WED-1 <i>Cryptosporidium</i> and <i>Giardia</i> in the Global Water Pathogen Project (GWPP)</p> |
| <p>9:30-9:40</p> | <p>Paul Raymond Hunter, Philippa King, Maha Bouzid, Erica Kintz O-WED-2 Cryptosporidiosis in low-income countries: Is it the animals, the drinking water or the toilets?</p> |
| <p>9:40-9:50</p> | <p>Elizabeth Anne Wells, Hannah Shaw, Emily Hotchkiss, Janice Gilray, Remedios Ayton, James Green, Frank Katzer, Andrew Wells, and Elisabeth Innes O-WED-3 Prevalence, species identification and genotyping <i>Cryptosporidium</i> from livestock and deer in a catchment with a history of public water supply contamination</p> |
| <p>9:50-10:00</p> | <p>Richard Elson, Sanch Kanagarajah, Alison Smith-Palmer, Gillian Hawkins, Claire Alexander, Christopher Williams, Robert Smith, Gordon Langston Nichols, Rachel Chalmers O-WED-4 National increase in reports of <i>Cryptosporidium</i> . in the United Kingdom during 2015 and 2016.</p> |
| <p>10:00-10:10</p> | <p>Guy Robinson, Isabelle Durance, Steve Ormerod, Rachel M Chalmers O-WED-5 Aquatic biota and <i>Cryptosporidium</i> in upland rivers and ecosystems</p> |
| <p>10:10-10:20</p> | <p>Gordon Nichols, Richard Elson, Amy Mikail, Rachel Chalmers O-WED-6 Detecting national outbreaks of cryptosporidiosis in England and Wales</p> |



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| 10:20-10:30 | SuzanTrienekens, Sanch Kanagarajahy, Ines Campos-Matos, Neville Verlander, Andre Charlett, Sophie Shaun, Thomas Inns, Richard Elson, Rachel Chalmers, Russell Gorton, Gillian Hawkins, Alison Smith-Palmer, Claire Alexander, Christopher Williams, Gordon Nichols |
| O-WED-7 | National <i>Cryptosporidium</i> outbreak linked to salad |
| 10:30-11:00 | COFFEE BREAK |
| 11:00-12:30 | SESSION: FOOD AND WATER TRANSMISSION II |
| Oral Presentations | Chairs: Paul Hunter, Fidel A. Núñez |
| 11:00-11:30 | Gordon Nichols, Joanne Freedman, Rachel Chalmers, Peter Chiodini, GillianHawkins, Claire Alexander, Diogo Marques, Richard Elson, Sanch Kanagarajah, Alison Smith-Palmer, Katherine Russell |
| KN-WED-8 | The rise in foodborne parasites – implications for laboratories |
| 11:30-11:40 | Sarah Julia Reiling, Xuyen Dai Hoa, Jamal Daoud, Matthias Geissler, Lucas Poncelet, Nathalie Corneau, Teodor Veres, Brent Dixon |
| O-WED-9 | From sample to answer: rapid detection and characterization of <i>Giardia</i> and <i>Cryptosporidium</i> in environmental samples using a microfluidic platform |
| 11:40-11:50 | Rebecca Ann Guy |
| O-WED-10 | Molecular characterization of <i>Cryptosporidium</i> in raw drinking water from the Saint Lawrence River and tributaries in Southern Quebec, Canada |
| 11:50-12:00 | Xiuping Li, Qigang Cai, Liqing Ma, Panagiotis Karanis |
| O-WED-11 | Molecular characterization of <i>Cryptosporidium</i> from waste water and nature waters in Qinghai province of China |
| 12:00-12:10 | Laura F Lalonde, Vladislav A Lobanov, Jenna R Oakley |
| O-WED-12 | Application of loop-mediated isothermal amplification (LAMP) assay for detection of <i>Giardia duodenalis</i> in fresh produce |
| 12:10-12:20 | Claudia Andrea Sánchez Ortega, Myriam Consuelo López Páez, Milena Guerrero Flórez, Luis Alejandro Galeano, Juan David Ramírez Gonzáles |
| O-WED-13 | Molecular detection of <i>Giardia duodenalis</i> in raw and drinking water samples from Nariño (Colombia) in 2016 |



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| 12:20-12:30 | Graciela I Ramírez Toro, Melitza A Crespo-Medina, Paul R Hunter, Harvey A Minnigh |
| O-WED-14 | <i>Cryptosporidium</i> , <i>Giardia</i> , indicators and water quality in small community potable water systems in Puerto Rico |
| Havana International Conference Center | |
| Restaurant “Los Flamboyanes” | |
| 12:30-13:30 | LUNCH |
| Havana International Conference Center | |
| ROOM 12 | |
| 13:30-15:00 | POSTER SESSION I |
| 15:00-17:00 | SESSION: INFECTION IN ANIMALS AND ZOOLOGICAL ASPECTS |
| Oral Presentations | Chairs: Lucy Robertson, Alex Grinberg |
| 15:00-15:15 | Ali Reza Zahedi, Paul Monis, Sarah Aucote, Brendon King, Andrea Papparini, Fuchun Jian, Rongchang Yang, Charlotte Oskam, Andrew Ball, Ian Robertson, Una Ryan |
| O-WED-15 | Prevalence and molecular characterization of <i>Cryptosporidium</i> species in animals inhabiting Sydney water catchments |
| 15:15-15:30 | Sarah Thomson, Carly A Hamilton, Francesca Chianini, Frank Katzer, Jayne C Hope, Neil A Mabbott, Lian J Morrison, Elisabeth A Innes |
| O-WED-16 | Host-pathogen interactions in neonatal calves experimentally infected with <i>Cryptosporidium parvum</i> |
| 15:30-15:45 | Michelle L Power, Sabine E Schiller, Liana F Wait, Samantha E Fox, Sarah J Peck |
| O-WED-17 | Human-associated <i>Cryptosporidium</i> and <i>Giardia</i> in wildlife species experiencing variable contact with humans |
| 15:45-16:00 | Razakandrainibe Romy Hery Tina, Diawara El-Hadji Ibhrama, Damien Costa, Laetitia Le Goff, Thibault Jozan, Raphael Jaquet, Gilles Gargala, Jean Ballet Jacques, Loic Favennec |
| O-WED-18 | Common occurrence of <i>Cryptosporidium hominis</i> in asymptomatic and symptomatic pre-weaned calves in Western France |



16:00-16:15 Milena Sato de Souza, Camila Guariz Homem, Marcelo Vasconcelos Meireles
O-WED-19 Development of real time polymerase chain reaction for detection of *Cryptosporidium canis* in fecal samples of dogs

16:15-16:30 Daniel J Eibach, Ralf Krumkamp, Hassan Al-Emran, Nimako Sarpong, Yaw Adu-Sarkodie, Egbert Tannich, Juergen May
O-WED-20 Anthroponotic transmission of *Cryptosporidium spp.* in rural Ghana

16:30-16:45 Alex Grinberg
O-WED-21 The natural history of calf cryptosporidiosis and its relevance to the design and implementation of field trials of anti-*Cryptosporidium* compounds

16:45-17:00 Christian Klotz, Yosra A Helmy, Nastasia G Sperling, Sabrina Schmidt, Ulrike Rosenfeld, Daniela Reil, Rainer G Ulrich, Toni Aebischer
O-WED-22 Prevalence and distribution of *Giardia spp* in wild rodents in Germany

Workshop
Havana International Conference Center
ROOM 3

17:00-17:45 Félix Manuel Rosado García, Guerrero Flórez Milena Gabriele Karanis María Del Carmen Hinojosa, Panagiotis Karanis
W-WED-23 Water-borne Protozoan Parasites: The Latin America Perspective

Havana International Conference Center
18:30
WELCOME RECEPTION Restaurant “EI BUCAN”



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| 10:15-10:20 | Jessica Beser, Jadwiga Winiiecka-Krusnell, Margareta Löfdahl, Marianne Lebbad |
| PO-THU-7 | Two <i>Cryptosporidium hominis</i> subtype families with zoonotic potential diagnosed in Swedish patients |
| 10:20-10:25 | Jessica Beser, Rune Stensvold, Enemark Heidi Larsen, Marianne Lebbad |
| PO-THU-8 | Characterization of the gp60 gene of <i>Cryptosporidium suis</i> |
| 10:25-10:30 | Hijawi Nawal Sameeh |
| PO-THU-8 Bis. | Genetic characterization of <i>Giardia</i> and <i>Cryptosporidium</i> isolates from Jordan |
| 10:30-11:00 | COFFEE BREAK |
| 11:00-12:00 | SESSION: CLINICAL ASPECTS AND PUBLIC HEALTH |
| Oral Presentations | Chairs: Angel Escobedo, Loic Favennec |
| 11:00-11:20 | Angel Felix Gutierrez Fernandez |
| O-THU-9 | Social determinants of health, universal health coverage, and sustainable development |
| 11:20-11:40 | Loic Favennec, ANOFEL Cryptosporidium National Network |
| O-THU-10 | Clinical and epidemiological characteristics of <i>Cryptosporidium spp</i> infections in adult and pediatric immunocompromised patients in France, 2015-2016 |
| 11:40-11:50 | Dany Yiseth Perdomo Ramirez, Adriana M. Trujillo Cifuentes, Diana M. Zambrano Delgado, Daniela Cardona Londoño, Alejandra Chacón Zuluaga, Diana Paola Tejedor Restrepo, Angel A Escobedo Carbonell, Alfonso Rodriguez-Morales |
| O-THU-11 | Potential association between the incidence of giardiasis and inflammatory bowel syndrome in Colombia, 2009 – 2015 |
| 11:50-12:00 | Harvey Tatiani Vitor, Fehlberg Hlytchaikra Ferraz, Sampaio Júlia Stabile Contel, Carvalho Sílvia Maria Santos, Da Rocha Christiane Maria Barcellos Magalhães, Albuquerque George Rego |
| O-THU-12 | Co-infections by <i>Giardia duodenalis</i> in rural communities of the municipality of Ilhéus, Bahia, Brazil |



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| Havana International Conference Center Restaurant “Los Flamboyanes” | |
| 12:00-13:00 | LUNCH |
| Havana International Conference Center ROOM 12 | |
| 13:00-14:30 | POSTER SESSION II |
| 14:30-16:00 | SESSION: DIAGNOSIS |
| Oral Presentations | Chairs: Gilles Gargala, Guy Robinson |
| <p>14:30-15:00 Guy Robinson, Kristin Elwin, Matthew Bull, Thomas R Connor, Rachel M Chalmers O-THU-13 Whole genome amplification and a metagenomic approach for the detection and comparison of <i>Cryptosporidium</i> and <i>Cyclospora</i> from clinical samples</p> | |
| <p>15:00-15:20 Razakandrainibe Romy Hery Tina, Emilie Frealle, Celine Nourisson, Stephane Valot, Loic Favennec, Nathalie Kapel, Emmanuel Dutoit, Philippe Poirier, Frederic Dalle, ANOFEL <i>Cryptosporidium</i> National Network O-THU-14 Real-time PCR procedure for <i>Cryptosporidium spp.</i> detection in human stools: a multicentric evaluation</p> | |
| <p>15:20-15:40 Øystein Haarklau Johansen, Alemseged Abdissa, Zeleke Mekonnen, Wakjira Kebede, Beza Eshetu , Mike Zangenberg, Nina Langeland, Lucy Robertson, Kurt Hanevik O-THU-15 Low-cost point-of-care diagnosis of <i>Cryptosporidium</i> infection in resource limited settings – the CRYPTO-POC study</p> | |
| <p>15:40-16:00 Milena Sato de Souza Marcelo Vasconcelos Meireles, Mark C Jenkins O-THU-16 Detection of <i>Cryptosporidium parvum</i> oocysts by indirect immunofluorescence using anti-recombinant CP41 protein antibodies</p> | |
| 16:00-17:10 | SESSION: TREATMENT |
| Oral Presentations | Chairs: Pedro Almirall, Marco Lalle |



16:00-16:30 Eugenio L de Hostos, Robert K M Choy, David A Shoultz

KN-THU-17 Progress in *Cryptosporidium* drug development

16:30-16:40 Melissa Suzanne Love, Federico C Beasley, Rajiv S Jumani, Peter G Schultz, Arnab K Chatterjee, Christopher D Huston, Case W McNamara

O-THU-18 A high-throughput phenotypic screen identifies clofazimine as a potential treatment for cryptosporidiosis

16:40-16:50 Elhadji Ibrahima Diawara, Laetitia Le Goff, Andrew V Stachulski, Arnaud François, Romy Razakandrainibe, Jean-Jacques Ballet, Loïc Favennec, Jean-François Rossignol, Gilles Ludovic Gargala

O-THU-19 Activity of the amino-ester thiazolide RM-5061 against *Cryptosporidium parvum* in cell culture assay and in experimentally infected gerbils

16:50-17:00 Serena Camerini, Alessio Bocedi, Serena Cecchetti, Marialuisa Casella, Miriam Carbo, Veronica Morea, Simone Brogi, Annarita Fiorillo, Giorgio Ricci, Edoardo Pozio, Sandra Gemma, Andrea Ilari, Marco Lalle

O-THU-20 Anti-giardial activity of NBDHEX: identification of targets and mechanisms of action

17:00-17:10 Jose Manuel Ordonez-Mena

O-THU-21 Comparative efficacy of drugs for treating giardiasis: a systematic update of the literature and network meta-analysis of randomized clinical trials



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| <p>Friday 28th, April</p> <p style="text-align: center;">Havana International Conference Center</p> <p style="text-align: center;">ROOM 3</p> | |
| 8:30-10:00 | SESSION: CELL BIOLOGY |
| Oral Presentations | Chairs: Scott Dawson, Maria Carolina Touz |
| 8:30-9:00 KN-FRI-1 | JK Pham, C Nosala, N Barash, HA Starceвич, EY, Scott C. Dawson Metabolism and early encystation in high-density <i>Giardia</i> foci in the mouse small intestine |
| 9:00-9:15 O-FRI-2 | Alexander Richard Paredez Rapid myosin independent cytokinesis in <i>Giardia lamblia</i> requires coordination between flagella force generation, the actin cytoskeleton, and membrane remodeling |
| 9:15-9:30 O-FRI-3 | Agostina M Saluso, Natacha M Zlocowski, Gonzalo F Mayol, Nahuel N Zamponi, Maria C Touz, Andrea S Ropolo Histone methyl-transferase 1 is a key regulator of the encystation process in the parasite <i>Giardia lamblia</i> |
| 9:30-9:40 O-FRI-4 | Lenka Cernikova, Paulin Zumthor, Carmen Faso, and Adrian B. Hehl A family of PX-domain lipid binding proteins as organizers of the endocytic organelle system in <i>Giardia lamblia</i> |
| 9:40-9:50 O-FRI-5 | Christopher N. Miller, J.D. Josse Lyne, Ian R. Brown, Martin Michaelis, Anastasios D Tsaousis A new long-term cell culturing system for <i>Cryptosporidium</i> and new tools for investigating its cell biology |
| Poster-Oral Presentations | |
| 9:50-9:55 PO-FRI-6 | Chris Nosala, Scott C Dawson Candidate cross-bridge proteins necessary for ventral disc biogenesis and functional attachment in <i>Giardia lamblia</i> . |



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| 9:55-10:00 | Gabriel López-Velázquez, Hugo Daniel Lujan, Cynthia Fernández-Lainez, José Ignacio De la Mora, Itzhel García-Torres, Sergio Enríquez-Flores, Daniela Caudillo de la Portilla |
| PO-FRI-7 | Towards the understanding of the biological meaning of the giardial triosephosphate isomerase oligomerization |
| 10:00-10:30 | Coffee break |
| 10:30-12:00 | SESSION: HOST PARASITE INTERACTION I |
| Oral Presentations | Chairs: Andre Buret, Guadalupe Ortega-Pierres |
| 10:30-11:00 | Andre G. Buret |
| KN-FRI-8 | <i>Giardia</i> disrupts gut microbiota biofilms, causes intestinal mucus depletion, and breaks epithelial barriers: New insights into disease pathogenesis |
| 11:00-11:15 | Steven Mitchell Singer, Aleksander Keselman, Jenny G Maloney, Mark Y Fink |
| O-FRI-9 | The intersection of immune responses, microbiota and pathogenesis in giardiasis |
| 11:15-11:30 | M. Guadalupe Ortega-Pierres, Rodrigo Quezada-Lazaro, Yessica Vázquez-Cóbix, Rocío Fonseca-Liñán, Daniel Hernández-Cueto, Luz María Gómez-Jiménez, José Maxil-Flores, Sara Huerta-Yépez |
| O-FRI-10 | Disruption of intestinal homeostasis in gerbils (<i>Meriones unguiculatus</i>) by <i>Giardia duodenalis</i> trophozoites that express a cathepsin B protease or the variable surface protein VSP9B10A. |
| 11:30-11:45 | Christopher N. Miller, Haris Panagos, Martin Kvac, Mark J. Howard, Anastasios D Tsaousis |
| O-FRI-11 | The metabolic changes of the host-pathogen environment in a <i>Cryptosporidium</i> infection |
| 11:45-12:00 | Maria A. DiCicco Repass, Ying C Chen, Mary A Estes, David L. Kaplan, Honorine D Ward |
| O-FRI-12 | Novel bioengineered 3D in vitro and ex vivo human intestinal models for long term infection of <i>Cryptosporidium</i> spp |



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| 12:00-13:30 | SESSION: HOST PARASITE INTERACTION II |
| Oral Presentations | Chairs: Staffan Svärd, Kurt Hanevik |
| 12:00-12:30 Showgy Yasir Maayeh, Britta Stadelmann, Livia Knörr, Karin Sköld, Mark Hoepfner, Manfred Grabherr, Staffan Gunnar Svärd | |
| KN-FRI-13 | Transcriptional profiling of differentiated CaCo-2 intestinal epithelial cells response to <i>Giardia Intestinalis</i> during early onset of in vitro interactions: insights into the pathways of cytokine production and regulation |
| 12:30-12:45 Carly Anne Hamilton, Anuj Sehgal, Edith Paxton, Sarah Thomson, Frank Katzer, Elisabeth A Innes, Jayne C Hope, Neil A Mabbott, Liam J Morrison | |
| O-FRI-14 | Development of bovine intestinal organoids as a model to study host-parasite interactions |
| 12:45-13:00 Martha Baydoun, Sadia Benamrouz, Karine Guyot, Nausica Gantois, Magali Chabe, Colette Creusy, Pierre Gosset, Baptiste Delaire, Eric Viscogliosi, Vincent Senez, Jérôme Follet, Gabriela Certad | |
| O-FRI-15 | Three-dimensional (3D) culture of adult murine colon as an <i>in-vitro</i> model of cryptosporidiosis |
| 13:00-13:15 Marwan Osman, Sadia Benamrouz, Karine Guyot, Martha Baydoun, Emilie Frealle, Magali Chabe, Nausicaa Gantois, Baptiste Delaire, Anne Goffard, Albert Aoun, Nawaf Jurdi, Fouad Dabboussi, Gael Even, Christian Slomianny, Pierre Gosset, Monzer Hamze, Colette Creusy, Eric Viscogliosi, Gabriela Certad, | |
| O-FRI-16 | High Association of <i>Cryptosporidium</i> infection with digestive cancer in humans |
| 13:15-13:30 Audrey Dubourg, Dong Xia, John P. Winpenny, Suha Al Naimia, Maha Bouzid, Darren W. Sextona, Jonathan M. Wastling, Paul R. Hunter and Kevin M. Tyler | |
| O-FRI-17 | <i>Giardia</i> secretome highlights secreted tenascins as a key component of pathogenesis |
| Havana International Conference Center | |
| Restaurant “Los Flamboyanes” | |
| 13:30-14:30 | LUNCH |
| 14:30-15:30 | SESSION: IMMUNE RESPONSE |



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| Oral Presentations | Chair: Steven Singer |
| 14:30-15:00 Torunn Hjoello, Eirik Bratland, Matej Radunovic, Nina Langeland, Kurt Hanevik O-FRI-18 Longitudinal study of IgA and IgG responses towards variant-specific <i>Giardia lamblia</i> surface protein | |
| 15:00-15:15 Oonagh Paerewijck O-FRI-19 Interleukin-17 receptor A (IL-17RA) as a central regulator of the protective immune response against <i>Giardia</i> | |
| 15:15-15:30 Abhineet Sheoran, Ruby Pina-Mimbela, Alison Keheler, Samuel Major, Saul Tzipori O-FRI-20 Immunity induced following infection with <i>Cryptosporidium parvum</i> provides protection of the host against <i>Cryptosporidium hominis</i> | |
| 15:30-17:00 | SESSION: GENOMICS, TRANSCRIPTOMICS AND PROTEOMICS |
| Oral Presentations | Chairs. Karin Troell, Christian Klotz |
| 15:30-16:00 Aaron R. Jex, Ásgeir Ástvaldsson, Elin Einarsson and Staffan Svärd KN-FRI-21 Completed reference assemblies and re-annotation of the <i>Giardia</i> genomes | |
| 16:00-16:15 Janet Yee, Kathleen Horlock-Roberts Karin Troell, Jon Jerlström-Hultqvist, Elin Einarsson, Ulf Ribacke, Erik Pelve, Rolf Bernander, Michael Donaldson, Staffan G Svärd O-FRI-22 Transcriptome analysis of the <i>Giardia intestinalis</i> cell cycle | |
| 16:15-16:30 Giovanni Widmer, Marzieh Ezzaty Mirhashemi, Joana C Silva, Olukemi O Ifeonu, Saul Tzipori O-FRI-23 The transcriptome of <i>Cryptosporidium</i> oocysts and intracellular stages | |
| 16:30-16:45 Rosa Maria Bermudez-Cruz O-FRI-24 DNA damage repair through homologous recombination in <i>Giardia duodenalis</i> trophozoites | |
| Poster-Oral Presentations | |



16:45-16:50 Elin Maria Einarsson, Staffan Gunnar Svärd ,Ulf Erik Ribacke
PO-FRI-25 The epigenome of *Giardia intestinalis* during differentiation

16:50-16:55 Eduardo García Huerta, Rosa María Bermúdez Cruz
PO-FRI-26 An inducible CRISPR/Cas9 system for gene editing in *Giardia duodenalis*.

16:55-17:00 Jon Jerlström-Hultqvist, Feifei Xu, Elin Einarsson, Dimitra Peirasmaki, Ásgeir
Ástvaldsson, Lars Eckmann, Jan Andersson, Staffan G. Svärd
PO-FRI-27 The compact genome of *Giardia muris*

Quick “update” and tutorial

17:00-17:30 Jessica C. Kissinger, Omar Harb and the EuPathDB Team.
OQ-FRI-28 CryptoDB and GiardiaDB.org – A Tutorial of New Features

Havana International Conference Center

ROOM 3

CLOSING CEREMONY

18:00

PRESENTATION OF THE HUW SMITH AWARD

19:00

GALA DINNER Restaurant “EI BUCAN”



Wednesday 26th, April

POSTER SESSION I

Havana International Conference Center
ROOM 12

Food and water transmission (I) and (II)

P-WED-1 Malnutrition, livestock, and water: results from a four-year panel study in Sila, Chad
Anastasia A Marshak, Erin Michelle Boyd, Helen A Young

P-WED-2 Detection of protozoa in drinking water and effectiveness of measures for its reduction
Fabiana Maria Lora Suarez, Jessica Triviño Valencia, Jorge Enrique Gomez Marin

P-WED-3 Prevalence and spatial distribution of *Giardia lamblia* in Rio de Janeiro (Brazil): association with social determinants
Clarissa Perez Faria, Graziela Maria Zanini, Gisele Silva Dias, Sidnei da Silva, Marcelo Bessa Freitas, Ricardo Almendra, Paula Santana, Maria do Céu Rodrigues Sousa

P-WED-4 Educational intervention for prevention of *Giardia lamblia* in children of the day care centers In Bahia Honda 2015.
Yanel Paradela Marrero, Grisell Martínez Mirabal, Aniubis Nazco Zorrilla

P-WED-5 Chemical parameters and occurrence of *Cryptosporidium spp.* from raw and treated water from Nariño, Colombia
Milena Guerrero Florez, Arsenio A Hidalgo, Luis Alejandro Galeano

P-WED-6 Parasitological assessment of four small volume products used for domestic water treatment. 2016
Félix Manuel Rosado García, Zuleydi Hechavarría Aguinar, Gladys Esther Escalante Collazo, Yamila Puig Peña, Virginia Leyva Castillo



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| P-WED-7 | Standardization of a method for the recovery of <i>Giardia spp</i> from <i>Brassica oleracea</i> (cabbage) & <i>Lactuca sativa</i> (lettuce) Natalia Hernandez Arango, Gloria Deicy Muñoz Sanchez, Fabiana Maria Lora Suarez, Jorge Enrique Gomez Marin |
| P-WED-8 | <i>Cryptosporidium spp.</i> and <i>Blastocystis sp.</i> detection in water in Cuba Lenina Tamara Menocal Heredia, Yuria Isabel Caraballo Sánchez |
| P-WED-9 | Detection of <i>Giardia spp.</i> and <i>Cryptosporidium spp.</i> in vegetables of growing areas from Havana Yamila Puig Peña, Félix Manuel Rosado García, Virginia Leyva Castillo, Lourdes Batista Gutiérrez |
| P-WED-10 | Efficient detection of <i>Cryptosporidium</i> and <i>Giardia</i> in water by LAMP Jerry E Ongerth |
| Infection in animals and zoonotic aspects | |
| P-WED-11 | Adult cattle and their role in the transmission of <i>C. parvum</i> to calves Hannah Jade Shaw, Liam J Morrison, Elisabeth A Innes, Frank Katzer |
| P-WED-12 | <i>Cryptosporidium</i> and <i>Giardia</i> infections: prevalence, zoonotic potential and risk factors in Danish cats Enemark Heidi Larsen, Thamsborg Stig Milan |
| P-WED-13 | Development of Tm - shift genotyping method for detection of cat-derived <i>Giardia lamblia</i> Pan Wei Da, Fu Ye Qi, Li Guo Qing |
| P-WED-14 | Molecular detection of <i>Cryptosporidium parvum</i> (CP) and Cryptopain and Cryptostatin genes from stool samples of neonatal calves with diarrhea Aynur Zeynep Erdem, Aynur Huseyin, Ertug Sema, Ertabaklar Hatice, Bozdogan Bulent |
| P-WED-15 | A reduction in weight gain found in beef calves with clinical cryptosporidiosis Hannah Jade Shaw, Liam J Morrison, Elisabeth A Innes, Frank Katzer |



P-WED-16 First description of *Cryptosporidium parvum* in carrier pigeons (*Columba livia*)
Milena Sato de Souza, Elis Domingos Ferrari, Bruno César Miranda Oliveira, Mariele Fernanda Cruz Panegossi, Alex Akira Nakamura, Marcelo Vasconcelos Meireles, Giovanni Widmer, Katia Denise Saraiva Bresciani

P-WED-17 Can infection with one isolate of *C. parvum* protect against infection with another in lambs?
Sarah Thomson, Beth A Wells, Paul M Bartley, Ross Bacchetti, Joao Luis Garcia, Nicholas N Jonsson, Elisabeth A Innes, Frank Katzer

P-WED-18 Impact of confinement housing on study end-points in the calf model of cryptosporidiosis
Geneva Graef, Natalie J. Hurst, Lance Kidder, Tracy L. Sy, Laura B. Goodman, Whitney Preston, Samuel L. M. Arnold, Jennifer A. Zambriski

P-WED-19 Development of a gp60 subtyping tool for *Cryptosporidium felis*
Karin Troell, Cecilia Alsmark, Laura Rojas-Lopez, Martin Norling, Jadwiga Winiecka-Krusnell, Kristin Elwin, Rachel Chalmers, Enemark Heidi Larsen, Jessica Beser, Marianne Lebbad

P-WED-20 *Cryptosporidium* infections in cattle and sheep of Qinghai Province, China
Ying Jian, Xueyong Zhang, Guanghua Wang, Panagiotis Karanis

P-WED-21 *Giardia duodenalis* infections in birds of Qinghai Province, China
Liqing Ma, Xueyong Zhang, Geping Wang, Panagiotis Karanis

Molecular epidemiology and typing

PO-WED-22 Two *Cryptosporidium hominis* subtype families with zoonotic potential diagnosed in Swedish patients
Jessica Beser, Jadwiga Winiecka-Krusnell, Margareta Löfdahl, Marianne Lebbad

PO-WED-23 Characterization of the gp60 gene of *Cryptosporidium suis*
Jessica Beser, Rune Stensvold, Enemark Heidi Larsen, Marianne Lebbad



P-WED-24 Real time assemblage-specific PCR assay for molecular characterization of *Giardia lamblia* assemblages in human patients from Rio de Janeiro (Brazil)
Clarissa Perez Faria, Graziela Maria Zanini, Gisele Silva Dias, Sidnei da Silva, Maria do Céu Rodrigues Sousa

P-WED-25 Molecular analysis of *Giardia duodenalis* isolates from symptomatic and asymptomatic children from La Habana, Cuba.
Luis Enrique Jerez Puebla, Fidel Angel Núñez Fernández, Lissette Pérez Santos, Lázara Rojas Rivero, Isabel Martínez Silva, Lucía Ayllón Valdés, Irais Virginia Atencio Millán, Norbert Ludwig Müller

P-WED-26 Local and global diversity and distribution of protozoan parasites: Spatial structure and genetic diversity of *Cryptosporidium* and *Giardia* species
Juan Carlos Garcia, Nigel P French, Alex A Grinberg, TS Hayman David

P-WED-27 Genetic characterization of *Giardia* and *Cryptosporidium* isolates from Jordan
Hijjawi Nawal Sameeh

P-WED-28 Molecular diagnostic and phylogeny of *Giardia intestinalis* in the Colombian Caribbean Coast
Vivian Tatiana Villalba Vizcaino, Lyda Raquel Castro

P-WED-29 Molecular diversity and frequency of the diarrheagenic enteric protozoan *Giardia duodenalis* and *Cryptosporidium spp.* in a hospital setting in Northern Spain
José Manuel Azcona, Aida de Lucio, Marta Hernández de Mingo, Concepción García García, Luis Miguel Soria Blanco, Lucía Morales, María Aguilera, Isabel Fuentes, David Antonio Carmena

P-WED-30 Genetic characterization of *Giardia duodenalis* in symptomatic individuals seeking medical attention in Utrecht, The Netherlands
Silvia Paulos, Pamela Köster, Aida de Lucio, Kathelijnn Scharpach, Lotte Andriessen, Marjolein P. Deege, Johannes G. Kusters, David Carmena



P-WED-31 Genetic diversity of *Cryptosporidium* in clinical samples from a major public hospital in Utrecht, The Netherlands

Silvia Paulos, Aida de Lucio, Pamela Carolina Köster, Kathelijn Scharpach, Lotte Andriessen, Marjolein P Deege, Johannes G Kusters, David Antonio Carmena

P-WED-32 Molecular characterization of *Giardia lamblia* isolates from children from Havana: association with clinical and epidemiological aspects

Luis Jerez Puebla, Fidel A. Núñez, Isabel Martínez Silva, Yuliet Méndez Sutil, Alexey Hernández Brito, Lázara Rojas Rivero, Dora Emma Ginorio Gabito, Iraís Atencio Millán, Lucía Ayllón Valdés, Norbert Muller

P-WED-33 Molecular finds of Cuban isolates of *Giardia lamblia*: relationship between genetic assemblages and clinical, epidemiological and zoonotic characteristics

Luis Jerez Puebla, Dora Emma Ginorio Gabito; Fidel A. Núñez, Isabel Martínez Silva, Yuliet Méndez Sutil, Alexey Hernández Brito, Lázara Rojas Rivero, Iraís Atencio Millán, Lucía Ayllón Valdés, Norbert Muller

Clinical aspects and public health

P-WED-34 Giardiasis in rural communities from the Municipality of Ilhéus, Bahia, Brazil - preliminary results

Harvey Tatiani Vitor, Fehlberg Hllytchaikra Ferraz, Carvalho Sílvia Maria Santos, Da Rocha Christiane Maria Barcellos Magalhães, Albuquerque George Rego

P-WED-35 Scientific production about *Giardia lamblia*. A 100-year analysis in Pubmed database (1916-2016)

Alexis Alejandro Garcia-Rivero, Javier Gonzalez Argote, Angel Arturo Escobedo Carbonell

P-WED-36 Scientific output about *Cryptosporidium* registered in Pubmed database

Javier Gonzalez Argote , Alexis Alejandro Garcia-Rivero, Gladys Escalante Collazo, Angel Arturo Escobedo Carbonell

P-WED-37 *Giardia lamblia* in adult patients attended at the "Hermanos Ameijeiras" Clinical Teaching Hospital

Alba González Maestrey



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| P-WED-38 | <i>Giardia</i> and <i>Cryptosporidium</i> double-infection in a patient with hemoptysis in Xining, Tibetan Plateau of Qinghai Province, China- a case report and first description of <i>Giardia</i> in human sputum Gabriele Karanis, Anna Ronge, Panagitois Karanis |
| P-WED-39 | Assessment of health workers' knowledge, perceptions and practices regarding <i>Cryptosporidium</i> infection in a health area Minerva Reina Pérez, Pedro Almirall, Yoana Machado |
| P-WED-40 | Awareness about giardiasis: A study in an outpatient setting in Havana, Cuba Ana Addys Arencibia Diaz, Vania Maria Hernández Bravo |
| P-WED-41 | Awareness of <i>Giardia</i> infection among Cuban patients living with human immunodeficiency virus Caristina Cañas, Frank Pacheco, Angel A. Escobedo, Pedro Almirall, Yohana Salazar |
| P-WED-42 | Cryptosporidiosis and giardiasis in patients with the human immunodeficiency virus infection. IPK, Cuban. 2010-2016 Yamilé Aleaga Santiesteban, Daniel Salazar Rodríguez, Beltrán Velázquez, Olga Castaño Araujo, Ingrid Domenech |
| P-WED-43 | <i>Giardia</i> infection and nutritional status of Cuban children Ursula H Carrillo, Annie Salabarría |
| P-WED-44 | <i>Giardia lamblia</i> and <i>Cryptosporidium spp.</i> infection in hospitalized children in “Roberto Rodríguez Fernández” general province hospital. Moron 2016 Niurys Ivonne Martín Perez |
| P-WED-45 | Giardiasis-related perceptions, attitudes and treatment-seeking practices in caregivers of Cuban children: public health implications Ivonne Ávila Ochoa, Pedro Almirall, Yohana Salazar, Angel A Escobedo |
| P-WED-46 | HAART in HIV infected patients: A way to control <i>Cryptosporidium</i> infection Ana C Duque González, Susell Álvarez Valdivia |



P-WED-47 Infection with *Giardia lamblia* in preschool children from Bauta, Artemisa province, Cuba. 2015
Fidel Angel Núñez Fernández, Niurka Pereda Novales, Luis Enrique Jerez-Puebla, Yanet Fresco Sampedro

P-WED-48 Intestinal parasitism in the school children population of Turquino Plan. Cumanayagua, 2016
Reinaldo R. Navarro Fernández, Adrián Jiménez López, Leonardo Cuellar, Jasiel Yanes Molina, José A. Chau Curbelo

P-WED-49 Potential sexual transmission of *Giardia*: a case series
Gustavo L Acosta, Pedro Almirall, Frank Pacheco, Elaine Chirino, Angel A. Escobedo

P-WED-50 Prevalence and associate risk factors of *Giardia intestinalis* Infections in a rural community, Isle of youth, Cuba
Delfín Alvarez Almanza

P-WED-51 Upper gastrointestinal disorders in children with *Giardia lamblia* and *Helicobacter pylori*, Teaching Pediatric Hospital “San Miguel del Padrón”, 2013-2016
Orlando Manuel Valdés Pérez, Cecilia Toledo Vega, Carmen Llanes Rodríguez

P-WED-52 *Giardia* infection in foreign visitors to Cuba
Caridad Almanza, Alejandro Pérez

P-WED-53 Prevalence of intestinal parasites and molecular characterization of *Giardia duodenalis* from dogs in La Habana, Cuba
Luis Enrique Jerez Puebla, Fidel Angel Núñez Fernández, Lázara Rojas Rivero, Iraís Virginia Atencio Millán, Yordan Robau Hernández, Norbert Ludwig Müller

P-WED-54 Socioeconomic and environmental factors in *Giardia lamblia* infection in children under 5 years old in El Recinto Estero de Enmedio, Ecuador. 2016
Alina Izquierdo Cirer, Elisa Boucourt Rodríguez, Carlos Armando Sarria Pérez



| Thursday 27 th , April | | POSTER SESSION II |
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| Havana International Conference Center ROOM 12 | | |
| Diagnosis | | |
| P-THU-1 | Clinical and endoscopic characterization of <i>Giardia lamblia</i> infection diagnosed by duodenal smears Leonor Aties López, Illis Campos Bestard, Milagros de la Caridad Milá Pascual, Daimarelis González Girón | |
| P-THU-2 | Giardiasis in patients under 19 diagnosed by duodenal smear Wladimiro Francisco Garcia Pérez, Mabel L. Andrade Ruiseco, Oramis Sosa Palacios, Beatriz Alfonso González, Damián Pineda Fernández. | |
| P-THU-3 | Diagnosis of cryptosporidiosis by modified acid-fast stain and antigen detection in human, Adana province, Turkey Ismail Soner Koltas, Mehtap M Demirkazık | |
| P-THU-4 | Comparison of trichrome stain and antigen detection methods for diagnosis of giardiasis, Adana province, Turkey Ismail Soner Koltas | |
| P-THU-5 | Evaluation of three commercially available multiplex real-time PCR kits for the detection of the enteric protozoan <i>Giardia duodenalis</i> , <i>Cryptosporidium spp</i> and <i>Entamoeba histolytica</i> in clinical samples Silvia Paulos, José M Saugar, Aida de Lucio, Isabel Fuentes, David Antonio Carmena | |
| P-THU-6 | Evaluation of a magnetic microsphere antibody detection assay for the investigation of exposure to <i>Cryptosporidium parvum</i> and <i>Cryptosporidium hominis</i> Kristin Elwin, Shannon Griffin, Honorine Ward, Catherine Thornton, Richard Puleston, Rachel M Chalmers | |
| P-THU-7 | <i>Giardia lamblia</i> infection diagnosed through duodenal smear José Fernández Sotolongo, Javier Orlando Díaz Elías, Marta Suárez Romero | |



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| P-THU-8 | Mucosal biopsy for the histologic diagnosis of cryptosporidiosis and giardiasis Ana Elisa Rodríguez, Yaxsier de Armas, Jennys Peraza, Marina Fernández, Ledy X López, Luis E Jérez, Virginia Capó |
| Treatment | |
| P-THU-9 | New target of proton pump inhibitors: inactivation of triosephosphate isomerase from <i>Giardia lamblia</i> by omeprazole derivatives Sergio Enríquez-Flores, Itzhel García-Torres, José Ignacio De la Mora, Gabriel López-Velázquez |
| P-THU-10 | Efficacy of Chitosan, a natural polysaccharide, against experimental cryptosporidiosis in neonatal mice and goat kids Karim Tarik Adjou |
| P-THU-11 | Effectiveness of different therapeutic regimens in the treatment of giardiasis in children Ana Lourdes García García, Ozana Cabrera Espinosa, Yarelys Dortas Perez, Odalys Rodriguez Marín, Lazaro Robert Companioni |
| P-THU-12 | Therapeutic homeopathic effect in giardiasis in pediatric patients of the gastroenterology clinic. Ciego de Avila Ana Lourdes García García, Norma Ciriaca Perez Calleja Kenia Felipe Diaz, Odalys Rodriguez Marín, Ozana Cabrera Espinosa |
| P-THU-13 | Microspheres of PBS-PEG block co-polymers as delivery system for synthetic drugs Jose Angel Ramon Hernandez, Vivian M Saez, Fernando Gomes de Souza, Jose Carlos Pinto, Marcio de Souza Nele |
| P-THU-14 | Role of lactobacilli-bile salt hydrolases (BSH) against <i>Giardia duodenalis</i> infection in suckling mice Thibault Allain, Soraya Chaouch, Myriam Thomas, Marie Agnès Travers , Isabelle Vallée, André G. Buret, Philippe Langella, Philippe Jean Grellier, Luis Gilberto Bermúdez-Humarán, Isabelle Catherine Florent, Bruno Polack |
| P-THU-15 | A decision analysis to guide drug selection for <i>Giardia</i> infection in Cuban children Angel A. Escobedo, Alberto Baly, Pedro Almirall, Caridad de J. Pérez |



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| P-THU-16 | Chloroquine as a potential alternative in the treatment of <i>Giardia</i> infection in children Carlos Z. Acanda, Angel A. Escobedo, Pedro Almirall |
| P-THU-17 | Cost-effectiveness analysis of seven different drug regimens for the treatment of <i>Giardia</i> infection in children Angel A. Escobedo, Alberto Baly, Javier Ballesteros, Pedro Almirall |
| P-THU-18 | Efficacy of 5-nitroimidazole compounds for giardiasis in Cuban children: review and meta-analysis Yohana Salazar, Angel A. Escobedo, Pedro Almirall, Eduardo González-Fraile, Javier Ballesteros |
| P-THU-19 | Efficacy of mebendazole in paediatric patients with giardiasis: a systematic review and meta-analysis Pedro Almirall, Angel A. Escobedo, Eduardo González-Fraile, Javier Ballesteros |
| P-THU-20 | Secnidazole and albendazole combination for pediatric patients with refractory giardiasis: A case series Elaine Chirino, Frank Pacheco, Pedro Almirall, Angel A. Escobedo |
| Cell biology | |
| PO-THU-21 | Candidate cross-bridge proteins necessary for ventral disc biogenesis and functional attachment in <i>Giardia lamblia</i> Chris Nosala, Scott C Dawson |
| PO-THU-22 | Towards the understanding of the biological meaning of the giardial triosephosphate isomerase oligomerization Gabriel López-Velázquez, Hugo Daniel Lujan, Cynthia Fernández-Lainez, José Ignacio De la Mora, Itzhel García-Torres, Sergio Enríquez-Flores, Daniela Caudillo de la Portilla |
| P-THU-23 | <i>Giardia</i> tunes flagellar length by modulating the cargo-capacity of intra-flagellar transport Shane G McNally and Scott C Dawson |



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| P-THU-24 | Stem-Loop RT-qPCR as an efficient tool for the detection and quantification of small RNAs in <i>Giardia lamblia</i> Jaime Marcial Quino, Saúl Gómez Manzo, Edgar Sierra Palacios, Horacio Reyes Vivas |
| P-THU-25 | <i>Giardia</i> AP1 – a new role for a clathrin adaptor in membrane trafficking? Sally Heusser, Lenka Cernikova, Carmen Faso, Adrian B. Hehl |
| P-THU-26 | An unusual giardial peptidase activity against a viral sequence as a probably characteristic of protozoan parasites José I de la Mora, Itzhel García-Torres, Sergio Enríquez-Flores, Alfonso Olivos-García, Augusto Gonzalez-Canto, Gabriel López-Velázquez |
| P-THU-27 | Characterization of <i>Giardia</i> heme protein function by active-site mutations Steven Patrick Rafferty, Brian Lukaszewicz, Manon Couture, Eliza McColl, Janet Yee, Zhen Yang |
| P-THU-28 | Identification of proteins characteristic of peroxisomes in <i>Giardia lamblia</i> Karla Berenice Acosta Virgen, Anel Edith Lagunes Guillén, Bibiana Chávez Munguía, Antonio Eusebio Lazcano Araujo-Reyes, Martha Espinosa Cantellano, Adolfo Martínez Palomo |
| P-THU-29 | Killing two birds with one stone: How <i>Giardia lamblia</i> handles with DNA replication and division Marcelo Santos Da Silva, Maria Carolina Elias, Renata Rosito Tonelli |
| P-THU-30 | Evaluating in vivo <i>Giardia</i> metabolism and encystation using bioluminescent imaging Hannah N Starcevich and Scott C Dawson |
| Host-parasite interaction I and II | |
| P-THU-31 | Characterization of the kinetic of in vivo experimental <i>Cryptosporidium parvum</i> infection in CD-1 neonate mice model Mohamed Mammeri, Aurélie Grasset-Chevillot, Meriem Thomas, Bruno B Polack, Christine Julien, Jean-Philippe Marden, Eric E Auclair, Isabelle I Vallee, Karim Tarik Adjou |



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| P-THU-32 | Effect of cathepsin B-like from <i>Giardia duodenalis</i> on intestinal homeostasis Rodrigo Quezada Lázaro, Rocío Fonseca Liñán, Daniel Dimitri Hernández Cueto, Luz María Gómez Jiménez, José A. Maxil Flores, Sara Huerta Yépez, Guadalupe Ortega Pierres |
| P-THU-33 | Characterization of the life cycle of diplomonad parasite <i>Spironucleus salmonicida</i> Ásgeir Ástvaldsson, Anders Alfjorden, Staffan G Svärd |
| P-THU-34 | Comparison of eleven <i>G. duodenalis</i> isolates questions Caco-2 monolayers as a valid model for <i>Giardia spp</i> infections Martin Rolf Kraft, Christian Klotz, Roland Buecker, Joerg-Dieter Schulzke, Toni Aebischer |
| P-THU-35 | Identification of <i>Giardia intestinalis</i> secretome in axenic cultures and during interaction with intestinal epithelial cells: the impact on host cells Showgy Yasir Maayeh, Jingyi Liu, Dimitra Peirasmaki, Karin Sköld, Livia Knörr, Katarina Hörnaeus, Sara Lind, Manfred Grabherr, Jonas Berqvist, Staffan Gunnar Svärd |
| P-THU-36 | Secreted <i>Giardia intestinalis</i> cysteine proteases disrupt intestinal epithelial cell junctional complexes and degrade chemokines Jingyi Liu, Dimitra Peirasmaki, Showgy Ma'ayeh, Britta Stadelmann, Lars Hellman, Staffan Svärd |
| P-THU-37 | High Cysteine Membrane Proteins are highly up-regulated during <i>Giardia</i> -host cell interactions Dimitra Peirasmaki, Marcela Ferella, Marc Höppner, Sara Campos, Johan Ankarklev, Britta Stadelmann, Manfred Grabherr, Staffan Svärd |
| Immune response | |
| P-THU-38 | Genetic variation in potential <i>Giardia</i> vaccine candidates cyst wall protein 2 and alpha1-giardin Matej Radunovic, Christian Klotz, Christina Skar Saghaug, Hans Richard Brattbakk, Toni Aebischer, Nina Langeland, Kurt Hanevik |



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| P-THU-39 | Fatal disseminated <i>Cryptosporidium erinacei</i> infection in an infant with Hyper-IgM syndrome caused by CD40L deficiency Romy Razakandrainibe, Gilles Gargala, Damien Costa, Marie-Elisabeth Bougnoux, Loïc Favennec |
| P-THU-40 | Memory T cell response in children with Cryptosporidiosis in South India Ajjampur Sitara SR, Babji Sudhir-, Ward Honorine-, Kang Gagandeep |
| P-THU-41 | Oral administration of a monoclonal antibody (5G8.B5) protects gerbils against <i>Giardia lamblia</i> infection Brenda Guadalupe Samaniego, María Alejandra Valdez, María Lucila Rascón, Boris Calderon, Francisco Humberto Astiazarán, Adriana Garibay-Escobar, Ramón Enrique Robles-Zepeda, Carlos Arturo Velazquez |
| Genomics, transcriptomics and proteomics | |
| PO-THU-43 | The epigenome of <i>Giardia intestinalis</i> during differentiation Elin Maria Einarsson, Staffan Gunnar Svärd, Ulf Erik Ribacke |
| PO-THU-44 | An inducible CRISPR/Cas9 system for gene editing in <i>Giardia duodenalis</i> Eduardo García Huerta, Rosa María Bermúdez Cruz |
| PO-THU-45 | The compact genome of <i>Giardia muris</i> Jon Jerlström-Hultqvist, Feifei Xu, Elin Einarsson, Dimitra Peirasmaki, Ásgeir Ástvaldsson, Lars Eckmann, Jan Andersson, Staffan G. Svärd |
| P-THU-46 | Spliceosomal proteins and small nuclear RNAs in <i>Giardia lamblia</i> : interactions between them to make a functional spliceosome? Vanessa Gómez, Moisés Wasserman |
| P-THU-47 | Transcriptome analysis of pig intestinal epithelial cells infected with <i>Cryptosporidium parvum in vitro</i> Mirhashemi Ezzaty Marzieh, Noubary Farzad, Susan Chapman-Bonofigilo, Saul Tzipori, Gordon S Huggins, Giovanni Widmer |
| P-THU-48 | Construction of a system to evaluate homologous recombination in <i>Giardia duodenalis</i> trophozoites Ulises Omar García Lepe, Rosa María Bermúdez Cruz |



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| P-THU-49 | Identification and characterization of a putative protein ATM/Tel1 in <i>Giardia duodenalis</i> during DNA damage repair María Luisa Bazan-Tejeda, Claudia María Valdez-Vargas, Rosa María Bermúdez-Cruz |
| P-THU-50 | Prokaryotic expression of elongation factor-1 alpha gene and its intracellular localization in <i>Giardia lamblia</i> trophozoite Yu Xin Gang , Shi Xian Li , Li Guo Qing |
| P-THU-51 | Genetic diversity in metronidazole activation and detoxification pathways in <i>Giardia lamblia</i> Christina Skaar Saghaug, Christian Klotz, Hans Richard Brattbakk, Tomasz Stokowy, Toni Aebisher, Nina Langeland, Kurt Hanevik |
| P-THU-52 | Design and construction of an inducible system locus-directed to produce DSB in <i>Giardia duodenalis</i> Sara Espinoza Corona, Rosa Maria Bermúdez-Cruz |
| P-THU-53 | Modular rewiring in the reductive evolution of protein-protein interactions networks in <i>Giardia</i> Nahuel N Zamponi, Staffan G Svard, Cristina B Marino-Buslje, Maria Carolina Touz |
| P-THU-54 | Origin of a major infectious disease in vertebrates: the timing of <i>Cryptosporidium</i> evolution and its hosts Juan Carlos Garcia, TS Hayman David |
| P-THU-55 | Investigation of epidemic and background cases of <i>Cryptosporidium hominis</i> using whole genome sequencing Rachel Mary Chalmers, Guy Robinson, Björn Hallström, Gregorio Pérez Cordon, Jessica Beser, Kevin Herbert |
| P-THU-56 | Enhanced <i>Cryptosporidium</i> reference genome sequence resources Rodrigo P. Baptista, Yiran Li, Adam Sateriale, Boris Striepen and Jessica C. Kissinger |