

The background of the entire image is a dense field of microscopic, spherical oocysts, characteristic of Cryptosporidium. These oocysts are shown in various shades of blue, green, and brown, with some appearing more prominent than others. Overlaid on this background is a cityscape of Philadelphia, with its skyscrapers and buildings reflected in a body of water. The text is overlaid on the top half of the image.

**First biannual
Cryptosporidium
meeting**

March 10-12 2024

Philadelphia

**1ST BIENNIAL *CRYPTOSPORIDIUM* MEETING, PHILADELPHIA
ACKNOWLEDGEMENTS**

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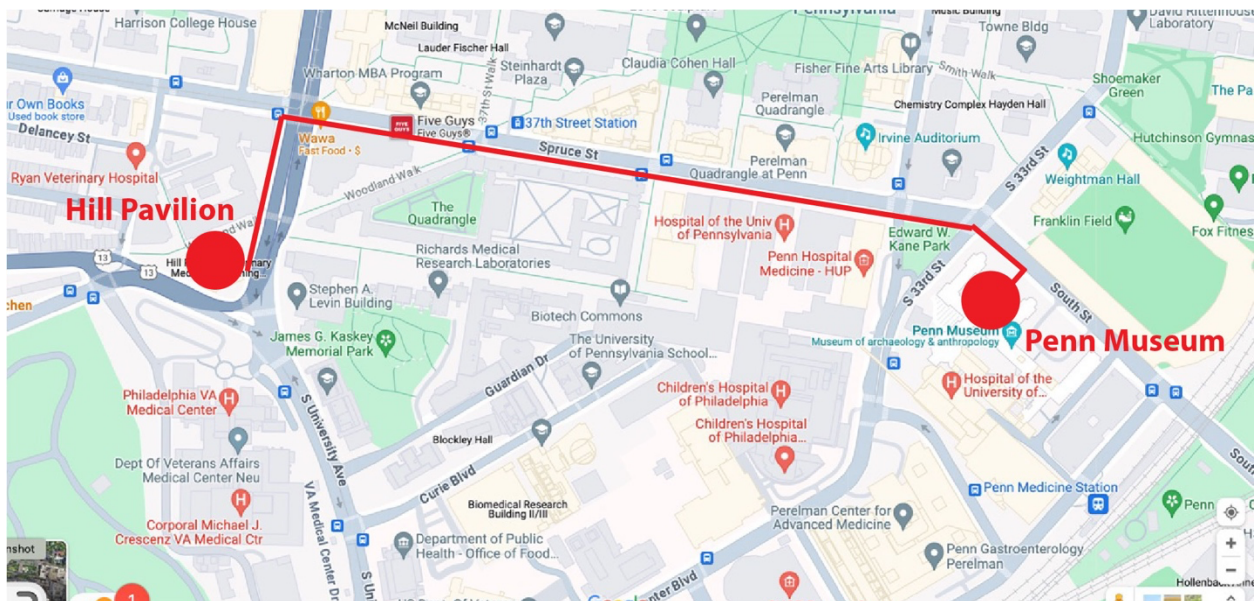
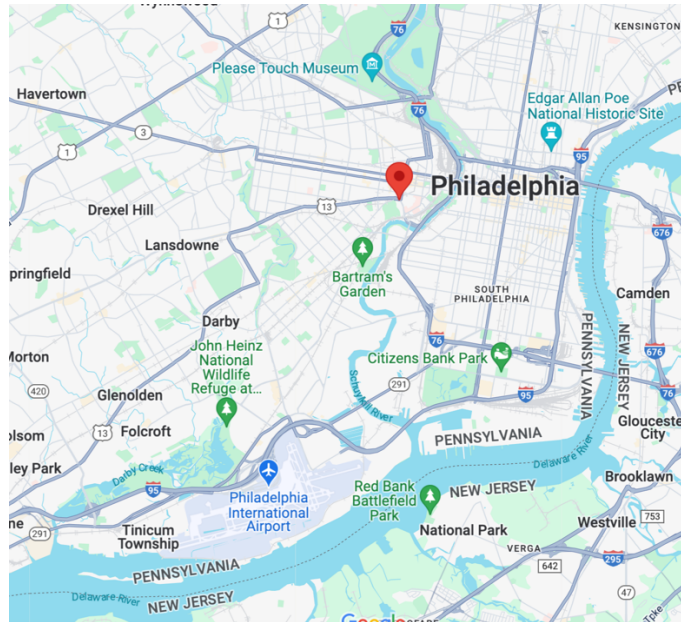
zoetis

*We thank **Michael Black** for meeting organization, **Becky Cheyney** for financial administration, and Dr. **Omar Harb** for his help in setting up web tools for registration and abstract submission.*

1ST BIENNIAL *CRYPTOSPORIDIUM* MEETING, PHILADELPHIA VENUES

All oral and poster sessions **Sunday to Tuesday** will be held on the first floor of **Hill Pavilion**, School of Veterinary Medicine, University of Pennsylvania, **380 S. University Avenue, Philadelphia, PA 19104**.

The Farewell food & social event on **Tuesday evening** will be at the **Penn Museum**, **3260 South Street**, in easy 3 block walking distance from Hill Pavilion.



1ST BIENNIAL *CRYPTOSPORIDIUM* MEETING, PHILADELPHIA PROGRAM

Talks: **15 min** presentation + **5 min** discussion. Please plan your presentation accordingly to allow for discussion, chairs will enforce time vigorously.

Posters: Poster boards will be available in the space right outside the lecture hall. Please plan to put your poster **up in the morning** of your day of presentation and take it **down in the evening**.

In both poster sessions you have the opportunity for hands-on introduction to the **ClinEpiDB** and **CryptoDB** databases from Stuart Brown & Danica Helb from the VEuPathDB team.

SUNDAY MARCH 10

03:00-05:00 pm Registration

04:30-5:30 pm **Cryptosporidiosis panel discussion: the problem, progress, and solutions.**

Discussion Leader: Wes Van Voorhis

Panelists: Beatrice Amadi, Sitara SR Ajjampur, Debbie Schaeffer, Audrey Odom John, Boris Striepen, Manjunatha Ujjini, Bill Petri, Robert Choy

05:30-07:30 pm *Session 1: Impact of Cryptosporidiosis*
Chair: Joyce Siwila & Mamun Kabir

Cryptosporidiosis and malnutrition in young children (this is a **30 min** presentation)

Beatrice Amadi (Tropical Gastroenterology and Nutrition Research Group)

***Cryptosporidium* spp. Infection in Bangladeshi children - A Longitudinal birth cohort study**

Mamun Kabir (icddr,b)

Intestinal coccidia in children with diarrhea in Quindío (Colombia)

Jorge Enrique Gomez Marin (Universidad del Quindío)

Cryptosporidiosis in India – The Vellore Crypto Cohorts

Sitara SR Ajjampur (Christian Medical College Vellore)

***Cryptosporidium* sp. in humans and livestock in Zambia: knowns and unknowns.**

Joyce Siwila (University of Zambia)

07:30-09:00 pm Welcome Get-Together with Food & Refreshments.

MONDAY MARCH 11

08:30-10:00 am *Session 2: Population Genetics*

Chair: Natalia Bayona Vásquez & Guy Robinson

MLVA in Action - Transforming the epidemiological surveillance of *Cryptosporidium parvum*

Guy Robinson (Cryptosporidium Reference Unit, Public Health Wales)

Next-generation sequencing for identification and detection of *Cryptosporidium* species, including minority variants and mixed infections at the species level

Randi Turner (USA Department of Agriculture)

Development of a MinION nanopore sequencing protocol and analysis pipeline for *Cryptosporidium* detection

Monica Santin (EMFSL/ARS/USDA)

A preliminary description of the first *Cryptosporidium serpentis* genome

Jenny G Maloney (Environmental Microbial and Food Safety Laboratory, Agricultural Research Service, United States Department of Agriculture)

Highly specific and sensitive TES-Seq captures at WGS resolution the population genetic structure of human cryptosporidiosis directly from stool samples

Oluwaremilekun Ajakaye (NIH)

10:00-10:30 am Coffee Break

10:30-12:30 am *Session 3: Genomics and New Tools for Research & Translation*
Chair: Rodrigo Baptista & Asis Kahn

Developing a homologous recombination based CRISPR screening method in *Cryptosporidium*

Lucy C Watson (Francis Crick Institute)

Method development for manufacturing *Cryptosporidium parvum* oocysts under CGMP for use in controlled human infection clinical studies

Rajiv S. Jumani (Novartis)

Tackling the Challenge of Limited DNA for *Cryptosporidium* Genomics

Natalia J Bayona-Vásquez (Oxford College of Emory University)

New and more complete reference genomes for the *Cryptosporidium* research community with uniform gene naming

Rodrigo P. Baptista (Houston Methodist Research Institute and University of Georgia)

Single-Oocysts and whole genome amplification with long-read sequencing in *Cryptosporidium*

Fiifi Agyabneg-Dadzie (University of Georgia)

12:30-02:30 pm Lunch & Poster Session A

A1 - Characterization of the effects of the novel marine compound, euryponolide, against the apicomplexans *Toxoplasma gondii* and *Cryptosporidium parvum*

Mary L Piaskowski (University of Minnesota)

A2 - The dynamics of dense granule secretion and biogenesis in *Cryptosporidium parvum*

Allison Cohen (University of Pennsylvania)

A3 - A decade of propagation: Evolutionary Dynamics of *Cryptosporidium muris*

Haley Slanis (Houston Methodist Research Institute)

A4 - Comparative Analysis of a New Chromosomal-Level Genome Assembly of *Cryptosporidium hominis*

Randi Turner (USA Department of Agriculture, Beltsville Agricultural Research Service, Animal Parasitic Disease Laboratory)

A5 - Comparative proteomics reveals *Cryptosporidium parvum* infection disrupts cellular barriers

Luyang Wang (Henan Agricultural University)

A6 - Comparison of different method to detect *Cryptosporidium* oocyst in water

Venceslas Villier (University of Rouen)

A7 - Design and synthesis of gut-restricted triazolopyridazines as anti-*Cryptosporidium* drugs

Antonino Giardina (Saint Louis University)

A8 - Design and Synthesis of Photoaffinity Probes for the Target Identification of the Anti-*Cryptosporidium* Lead Compounds

Ankita Sarkar (Saint Louis University)

A9 - Determining the *Cryptosporidium* female gamete's contribution to sexual reproduction

Abigail Daniels (University of Pennsylvania)

A10 - Development of a Phosphoinositol-4-kinase (PI4K) Inhibitor Compound Library for Cryptosporidiosis

Samantha C Brosend (Saint Louis University)

A11 - Epithelial Cell Intrinsic Restriction of *Cryptosporidium*

Justin L Roncaioli (University of Pennsylvania)

A12 - Exploring kinases as drug targets for the treatment of cryptosporidiosis

Grant MJ Hall (University of Dundee)

A13 - Genetic analysis of virulence in *Cryptosporidium parvum*

Wanyi Huang (Washington University School of Medicine)

A14 - Genomic insights into host adaptation in *Cryptosporidium*

Aqib Javaid (University of Illinois Urbana-Champaign)

A15 - Histology of *Cryptosporidium*-infected PRKCA^{-/-} mice

Ning-Jiun Jan (University of Virginia)

A16 - Host-parasite interactions: Study on the pathogenicity of *Mesanothryx* sp. and the resistance of hemocytes of swimming crab under the influence of temperature

Summia Perveen (Institute of Ocean Engineering, Ningbo University)

A17 - Identification of the target of Tartrolon E using Drug Affinity Responsive Target Stability (DARTS)

Robert Maddox (University of Minnesota - Twin Cities)

A18 - In situ structures of apicomplexan pre-conoidal rings by cryo-electron tomography

Matthew Martinez (University of Pennsylvania)

A19 - Induction of Usp18 in intestinal epithelial cells impairs IFN- γ -stimulated cell-intrinsic anti-*Cryptosporidium* defense

Ai-Yu Gong (Rush University Medical Center)

A20 - iNextEra: An efficient and cost-effective library preparation protocol for sequencing human-infecting *Cryptosporidium* spp.

Mohammad Imtiaz Uddin Bhuiyan (University of Georgia)

02:30-04:30 pm *Session 4: Parasite Cell & Developmental Biology*
Chair: Amandine Guerin & Yi-Wei Chang

Characterizing the role of a *Cryptosporidium parvum* signaling kinase in male gametogenesis and virulence

Maria G Nava (University of Illinois Urbana-Champaign)

Sex and the Cp: Defining novel mechanisms of meiosis in *Cryptosporidium parvum*

Abigail Kimball (Washington University School of Medicine)

Countdown to sex: a transcriptional switch underlies fate determination in *Cryptosporidium*

Katelyn A Walzer (University of Pennsylvania)

Role of a *Cryptosporidium* secretory protein in host cell attachment

Sumiti Vinayak (University of Illinois at Urbana-Champaign)

Tools for decrypting *Cryptosporidium* fertilization factors

Bethany R Korwin-Mihavics (University of Vermont)

Deciphering *Cryptosporidium* fertilization: Insights from exploring male gamete function

Aurelia Balestra (University of Pennsylvania)

04:30-05:00 pm Coffee Break

05:00-07:00 pm *Session 5: Host-Parasite Interaction & Immunity*
Chair: Zannatun Noor & Adam Sateriale

A microscopy-based CRISPR screen reveals the essential host genome for *Cryptosporidium* replication and development

Bishara Marzook (The Francis Crick Institute)

***Cryptosporidium parvum*, TLR3 and NF- κ B**

Luisa Leonelli (Pace University)

IL-22 promotes epithelial regeneration and IFN- γ -independent control of *Cryptosporidium*

Ian S Cohn (University of Pennsylvania)

Protein kinase C Modulates B Cell Activity in Murine Cryptosporidiosis

Chelsea Marie (University of Virginia)

The genetic basis of persistence in *Cryptosporidium*

Sebastian Shaw (University of Pennsylvania)

Export of RNA transcripts of parasitic origin into infected host cells in the pathogenesis of intestinal cryptosporidiosis

Xian-Ming Chen (Rush University Medical Center)

Free evening to network and socialize.

TUESDAY MARCH 12

08:30-10:00 am *Session 6: Cryptosporidium Metabolism & Emerging Targets*

Chair: Sumiti Vinayak & Sam Arnold

Investigate the Function and Druggability of *Cryptosporidium parvum* Aspartyl Proteases

Kharizta Wiradiputri (Walter and Eliza Hall Institute)

Lysyl-tRNA synthetase inhibitors for the treatment of cryptosporidiosis

Nicola Caldwell (University of Dundee)

Organoid high-throughput phenotypic screening platform for cryptosporidiosis

Curtis Thorne (University of Arizona)

Mode of action studies confirm on-target engagement of lysyl-tRNA synthetase inhibitor and lead to new selection marker for *Cryptosporidium*

Mattie Pawlowic (University of Dundee)

Dietary environmental factors shape the immune defense against *Cryptosporidium* infection

Muralidhara Rao Maradana (SRM Institute of Science & Technology)

10:00-10:30 am Coffee Break

10:30-12:30 am *Session 7: Immunity to Cryptosporidium & Vaccines*

Chair: Chelsea Marie & Robert Choy

A decrease in symptomatic cryptosporidiosis in children was concurrent with the development of antibodies with higher avidity to *Cryptosporidium* antigens

Carol A Gilchrist (University of Virginia School of Medicine)

Specific *Cryptosporidium* antigens associate with reinfection immunity and protection from cryptosporidiosis

Joseph J. Campo (Antigen Discovery, Inc.)

***Cryptosporidium* antigen specific IFN γ production in Bangladeshi children**

Zannatun Noor (International Centre for Diarrhoeal Disease Research, Bangladesh)

CD8+ T cell priming during *Cryptosporidium* infection

Breanne E. Haskins (University of Pennsylvania)

A single nucleotide polymorphism in PRKCA may facilitate repeat infections of pediatric *Cryptosporidium*

Grant J GianGrasso (University of Virginia School of Medicine)

CD40L Promotes the Development of *Cryptosporidium*-Specific T Cell Responses Which Mediate IFN- γ Independent Mechanisms of Resistance

Keenan O'Dea (University of Pennsylvania)

12:30-02:30 pm Lunch & Poster Session B

B1 - Insight into molecular interaction between *Cryptosporidium parvum* and the lamb's lettuce

Sophie Kubina (University of Rouen)

B2 - Investigating the role of chromatin regulation in life cycle progression of *Cryptosporidium* parasites.

Christopher Noetzel (University of Pennsylvania)

B3 - Microbiome-Metabolomics Analysis of the Impacts of *Cryptosporidium muris* Infection in BALB/C Mice

Luyang Wang (College of Veterinary Medicine, Henan Agricultural University)

B4 - Oidiodactones from the subterranean fungus, *Odiodendron truncatum*, display potent anti-*Toxoplasma* and anti-*Cryptosporidium* activity in vitro

Alexandra D Kolas (Department of Veterinary and Biomedical Sciences, University of Minnesota)

B5 - Life on a conveyor belt: *Cryptosporidium* and epithelial turnover

Bethan A Wallbank (University of Pennsylvania)

B6 - Optimization of Potent Phosphodiesterase Inhibitors for the Treatment of Cryptosporidiosis

Soumitra Guin (Saint Louis University)

B7 - Optimization of Triazolopyridazines for the Treatment of Cryptosporidiosis

Marvin J Meyers (Saint Louis University)

B8 - Organoid high-throughput phenotypic screening platform for cryptosporidiosis

Briana Guzman (University of Arizona)

B9 - Pharmacodynamic characterization of TartrolonE against *Cryptosporidium parvum*. Preliminary results.

Fernanda G Fumuso (Department of Veterinary and Biomedical Sciences, College of Veterinary Medicine, University of Minnesota)

B10 - Prevalence and molecular characterization of *Cryptosporidium* in the Alpine musk deer (*Moschus chrysogaster*) in Gansu province, northwestern China

Lei Deng (Broad Institute of MIT and Harvard)

B11 - The Rhoptry Secretory Apparatus of apicomplexans is an evolutionarily conserved structure

Shrawan Kumar Mageswaran (University of Pennsylvania)

B12 - PRKCa^{-/-} mice show no difference in *Cryptosporidium* burden from wild-type

Zachary A Lee (University of Virginia)

B13 - Propagation and Drug Testing of *Cryptosporidium parvum* in Human Intestinal Organoids
Hanan Baggar (University of Minnesota. Saint Paul, MN)

B14 - Selection of MMV665917 resistant *C. parvum* in the mouse for drug target identification
Ethan B Mattice (University of Vermont)

B15 - Synthesis and anti-*Cryptosporidium* structural activity relationship of pyrazolo[3,4-d]pyrimidine derivatives as phosphodiesterase inhibitors
Anusha Gokanapalle (Saint Louis University)

B16 - T cell trafficking to the small intestine in *Cryptosporidium* infection
Maria Merolle (University of Pennsylvania)

B17 - T follicular helper cells and antibodies as mediators of protective immunity against *Cryptosporidium* Infection
Dana M Van Fossen (University of Virginia)

B18 - The aspartyl protease CpASP2 is essential for *Cryptosporidium parvum* egress from the host cell.
Eleanor J. Smith (University of Pennsylvania)

B19 - Towards the establishment of functional epidemiology for human cryptosporidiosis
Christian Klotz (Robert Koch-Institute)

B20 - A new multilocus genotyping scheme for subtyping *Cryptosporidium parvum*
Guy Robinson (Cryptosporidium Reference Unit, Public Health Wales)

02:30-04:30 pm *Session 8: Cryptosporidium Drug Development*
 Chair: Mattie Pawlowic & Rajiv S. Jumani

An open-label *Cryptosporidium* Controlled Human Infection Model (CHIM) to assess the efficacy and safety of ABO809 in healthy participants
Bridget D Stuart (Novartis)

A PBPK modeling approach to estimate the impact of cryptosporidiosis symptoms on oral drug disposition
Sam Arnold (University of Washington)

Innovative Approaches to Quantifying Antiparasitic Effects: Immunofluorescence and AI Analysis of *Cryptosporidium* Life Cycle Phases
Anne-Charlotte Lenière (JUNIA ISA)

New class of orally active highly efficient anti-*Cryptosporidium* agents
Janine Wenker (INRAE, Université François Rabelais de Tours)

Optimization of orally efficacious phosphodiesterase inhibitors for cryptosporidiosis
Marvin J Meyers (Saint Louis University)

Future-proofing access to a novel anti-*Cryptosporidium* therapeutic: A systematic assessment of barriers and enablers in support of early planning for access
Paul G. Ashigbie (Novartis)

04:30-04:45 pm

Closing Remarks

06:00-09:00 pm

Dinner & Farewell Social at the Penn Museum

Have a safe trip home – and we hope to see you at next biannual *Cryptosporidium* meeting!