



## 23rd International Pathogenic Neisseria Conference

Boston Park Plaza Hotel, Boston, MA USA | September 24-29, 2023 | [ipnc2023.com](http://ipnc2023.com)

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### Sunday 9/24/2023

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- 3:00 - 8:00pm Registration (Avenue 34 Foyer)  
6:00 - 8:00pm **Welcome and Networking Reception** (Avenue 34)

### Monday 9/25/2023

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- 7:00-7:00pm Registration / Breakfast (Mezzanine Pre-Function)  
7:30-8:30am Registration (Avenue 34)

#### General Session (Grand Ballroom A)

- 8:30-8:45am **Introduction and Welcome**  
*Caroline Attardo Genco, PhD, Lee M. Wetzler, MD, Paola Massari*
- 8:45-9:30am **Keynote: What COVID-19 Taught Us About Pandemic Preparedness**  
*Speaker: Nahid Bhadelia, MD, MALD*
- 9:30-10:30am **Host Pathogen Interactions**  
*Moderators: Lisa A. Lewis, PhD and Scott Gray-Owen, PhD*
- 9:30-9:50am **Human transferrin and lactoferrin cooperatively support colonization by Neisseria meningitidis in the murine nasopharynx** - *Isaac Lee (Canada)*
- 9:50-10:05am **A role for NK cell-derived granzyme B in host defenses against gonorrhoea**  
*Rosane de Oliveira (United States)*
- 10:10-10:30am **The Neisseria meningitidis urethritis clade: characterization of a "chimeric pathogen"** - *Jennifer Edwards (United States)*
- 10:30-11:00am Break (Mezzanine Pre-Function)
- 11:00-12:00pm **Host Pathogen Interactions**
- 11:00-11:20am **The genetic basis of invasive meningococcal disease**  
*Vanessa Sancho Shimizu (United Kingdom)*
- 11:20-11:40am **Deciphering the initial response of endothelial cells to Neisseria meningitidis adhesion** - *Mathieu Coureuil (France)*
- 11:40-12:00pm **Interferon-epsilon, an estrogen-induced type I interferon, expressed in the female genital tract allows Neisseria gonorrhoeae to evade innate immune clearance** - *Evelyn Kurt-Jones (USA)*
- 12:15-1:45pm **Plated Lunch – open to all** (Avenue 34)
- 12:15-1:45pm **Mentoring Lunch - sponsored by Ngo Research Society** (Park/Scollay Room/Lobby Level)
- 2:00-3:40pm **Antimicrobial Resistance**  
*Moderators: Magnus Unemo, PhD and Freda Jen, PhD*

General Session (Grand Ballroom A)

- 2:00-2:20pm **Cell division principles and mechanisms of ceftriaxone resistance in *Neisseria gonorrhoeae*** - *Aditya Bandekar (USA)*
- 2:20-2:40pm **Prevalence of reduced susceptibility to 3rd generation cephalosporins in *Neisseria meningitidis* in the United States from 2017 to 2021** - *Sandip Shrestha (USA)*
- 2:40-3:00pm **An extremely narrow range antibiotic with a new mode of action against *Neisseria gonorrhoeae*** - *Nicolas Biais (France)*
- 3:00-3:20pm **Mutations in the  $\beta$ 3- $\beta$ 4 loop of penicillin-binding protein 2 from cephalosporin-resistant *Neisseria gonorrhoeae* hinder cephalosporin acylation via restriction of protein dynamics** - *Christopher Davies (USA)*
- 3:20-4:00pm Break (Mezzanine Pre-Function)

General Session (Grand Ballroom A)

4:00-5:01pm **Short Poster Talks Session 1**

*Moderators: Mignon du Plessis, PhD and William M. Shafer, PhD*

- 4:00-4:05pm **The Global Population Structure of *Neisseria meningitidis*** - *Neil MacAlasdair (Norway)*
- 4:08-4:13pm **Genomic analyses of African *Neisseria gonorrhoeae* isolates: identification of lineages distinct from the rest of the world** - *Odile Harrison (UK)*
- 4:16-4:21pm **Continuing genomic evolution of the urethritis-associated lineage 11.2 meningococcal clade NmUC** - *Emilio Rodriguez (USA)*
- 4:24-4:29pm ***Neisseria gonorrhoeae* Mutant Library** - *Hannah Landstrom (USA)*
- 4:32-4:37pm **Impact of filamentous bacteriophage on *Neisseria gonorrhoeae* biology**  
*Jessica Kopew (USA)*
- 4:40-4:45pm ***Neisseria gonorrhoeae* infection in the context of health - and bacterial vaginosis-associated microbiota communities in the lower female reproductive tract**  
*Katherine Rhodes (USA)*
- 4:48-4:53pm **A zinc regulated metalloprotein Ngo1049 contributes to metal homeostasis in *Neisseria gonorrhoeae*** - *Ian Liyayi (USA)*
- 4:56-5:01pm **Structure-function analysis of the gonococcal TonB-dependent transporter, HpuB**  
*Olivia Awate (USA)*
- 5:05-6:30pm **Poster Session 1 / Happy Hour - sponsored by the NgoRS (Grand Ballroom B & Statler)**  
**1. Therapeutics/Antimicrobial Resistance/Diagnostics**  
**2. Responses to Infection**  
**3. Epidemiology/Clinical Disease**  
*Note that the posters will be available through the conclusion of the meeting for your to browse.*
- 6:30pm Adjourn

## Tuesday 9/26/2023

- 7:00-6:00pm Registration (Mezzanine Pre-Function)
- 7:45-8:30am Breakfast (Avenue 34)
- General Session (Grand Ballroom A)
- 8:20am Announcements

- 8:25am **Introduction of Keynote** - *Yonatan H. Grad, MD, PhD*
- 8:30-9:15am **Keynote - The Landscape of Clinical Trials of Vaccines to Prevent Gonococcal Infection**  
*Jodie A. Dionne, MD, MSPH, FIDSA*
- 9:15-10:15am **Vaccines**  
*Moderators: Trevor F. Moraes, PhD and Ann Jerse, PhD*
- 9:15-9:35am **Cross reactive responses against *Neisseria gonorrhoeae* in high-risk individuals immunised by Bexsero** - *Jeremy Derrick (UK)*
- 9:35-9:55am **MenB-4C vaccination elicited IgG antibodies recognize meningococcal and cross react with gonococcal lipooligosaccharides (LOS)**  
*Yih-Ling Tzeng (United States)*
- 9:55-10:15am **Characterisation of 4CMenB vaccine-induced antibodies to *Neisseria gonorrhoeae*** - *Kate Seib (Australia)*
- 10:15-10:45am Break (Mezzanine Pre-Function)
- 10:45-12:05pm **Vaccines**  
*Moderators: Kate L. Seib and Sanjay Ram, MBBS*
- 10:45-11:05am **Protection against *N. gonorrhoeae* induced by OMV-based Meningococcal Vaccines are associated with cross-species directed humoral and cellular immune responses** - *Weiyang Zhu (United States)*
- 11:05-11:25am **Analysis of human monoclonal antibodies from 4CMenB vaccinees reveals PorB epitopes inducing cross-strain protection** - *Viola Viviani (Italy)*
- 11:25-11:45am **Modifying *Neisseria gonorrhoeae* OMVs to promote immune responses**  
*Rebekah Jones (United Kingdom)*
- 11:45-12:05pm **Preclinical Evidence for protective potential of a GMMA-based vaccine against gonococcus** - *Erika Bartolini (Italy)*
- 12:15-2:15pm **Boxed Lunch - Open to All** (Avenue 34)

### **Meningococcal Meningitis in the African Meningitis Belt: Surveillance, Outbreaks, and Future Preparedness** (sponsored by the Bill & Melinda Gates Foundation)

Join us for a lunch-time symposium focused on the burden of meningococcal meningitis in the African meningitis belt. In this symposium, we will learn about the evolving epidemiology of the meningococcus, study one country's experience surveilling the pathogen and the public health implications of their findings, and examine emerging outbreak data that will inform the development of delivery strategies for new affordable multivalent meningococcal conjugate vaccines (MMCV) in the coming years.

#### **Speakers:**

##### **Dr. Keith Klugman**

Director, Pneumonia and Pandemic Preparedness, Bill & Melinda Gate Foundation

##### **Dr. Brenda Kwambana-Adams**

Liverpool School of Tropical Medicine and Malawi-Liverpool-Wellcome Clinical Research Programme

##### **Dr Patrick Ansah**

Director of the Navrongo Health Research Centre, Deputy Director of Research and Development Division of the Ghana Health Service

##### **Dr. Emmanuele Eze**

Deputy Director of the Policy and Planning Division, Dept. of Planning Research & Statistics, Nigeria CDC

##### **John Neatherlin**

Senior Epidemiologist, CDC

General Session (Grand Ballroom A)

- 2:30-3:10pm **Vaccines**  
*Moderators: Jeremy Derrick, MA, PhD and Jo-Anne R. Dillon, PhD, FRSC, FCAHS*
- 2:30-2:50pm **Development of a pentavalent meningococcal conjugate vaccine, NmCV-5 (ACWYX) – Prasad Kulkarni and Dhananjay Kapse (USA)**
- 2:50-3:10pm **The target of a patient-derived fully-human monoclonal antibody is a novel cross-protective antigen - Millie Gladstone (United Kingdom)**
- 3:10-3:30pm Break (Mezzanine Pre-Function)

General Session (Grand Ballroom A)

- 3:30-4:23pm **Short Poster Talks Session 2**  
*Moderators: Xavier Nassif, MD, PhD and Charlene Kahler*
- 3:30-3:35pm **Interactive Visual Exploration of Neisseria Meningitidis - Keith Jolley (UK)**
- 3:38-3:43pm **B Part of it NT study: Immunisation for adolescents against two serious communicable diseases with one vaccine - Helen Marshall (Australia)**
- 3:54-3:59pm **Utility of targeting the bacterial transferrin receptor for a gonococcal vaccine Jamie Fegan (Canada)**
- 4:02-4:07pm **Immunogenicity of Extracellular Loop Hybrid Antigens of the Gonococcal Zinc Importers TdfJ and TdfH - Julie Stoudenmire (USA)**
- 4:10-4:15pm **Coordinated evolution of glycan structure, oligosaccharyltransferase protein targeting specificity and Tfp pilin subunit glycosylation within the genus Neisseria - Chris Hadjineophytou (Norway)**
- 4:18-4:23pm **Development of a multicellular in vitro model of the meningeal blood-CSF barrier to study Neisseria meningitidis infection Alexandra Schubert-Unkmeir (Germany)**
- 4:30-6:00pm **Poster Session 2 / Happy Hour (Grand Ballroom B & Statler)**  
**1. Vaccines**  
**2. Bacterial Physiology, Genomics and Responses**  
*Note that the posters will be available through the conclusion of the meeting for your to browse.*
- 6:00-8:00pm **On Your Own**
- 7:30-9:30pm **Registration (Avenue 34 Foyer)**
- 8:00-9:30pm **Optional Workshops**  
 An RSVP was required. Drinks and Dessert will be served.
- Platforms for Neisseria genomics and N. gonorrhoeae nomenclature LIMITED SPACE (Avenue 34 Studio 1)**  
*Session Moderators: Odile B. Harrison, PhD, Yonatan H. Grad, MD, PhD, Magnus Unemo, PhD, Tatum Mortimer, PhD, Anastasia Unitt, Daniel Golparian, MSc*
- OR**
- Developing standardized approaches to evaluate gonococcal vaccines and antimicrobials SESSION FULL (Avenue 34, Studio 2)**  
*Session Moderators: Alison K. Criss, PhD, Jennifer L Edwards, PhD Trevor F. Moraes, PhD, Thomas Rudel, PhD, Kate L. Seib*

9:30pm | Adjourn

## Wednesday 9/27/2023

7:30-3:30pm Registration (Mezzanine Pre-Function)

8:00-8:55am Breakfast (Avenue 34)

### General Session (Grand Ballroom A)

8:55am Announcements

9:00-10:30am **Boston Biotech Community Panel - From Idea to Industry**

9:00-9:45am **Panel One - Translating from Lab to Product**

**Moderator:**

*William Shaw, Vice Provost for Innovation, Tufts*

**Panelists:**

*Kathryn Kosuda, PhD, Co-Founder, Chief Scientific Officer, Vaxess Technologies*

*Munir Mosaheb, Senior Director, Head of Translational Biology, Senda Biosciences*

*John P. Mueller, PhD, Chief Development Officer, Executive Product Lead, Zoliflodacin, Inoviva*

9:45-10:30am **Panel Two - Academic Industry Collaborations – People Exchange**

**Moderator:**

*Katie Stebbins, Executive Director, Food & Nutrition Innovation Institute, Tufts University*

**Panelists:**

*Heather MacLeod, PhD, Director of In Vivo Target Discovery, Editas Medicine*

*Kate Nudel, Associate Director and Head of Applied Biology, Manifold*

*Gerald Pier, PhD, Professor of Medicine/Senior Investigator, Harvard Medical School/Brigham and Women's Hospital*

*Yi-Fen Yen, PhD, Director of Hyperpolarized Imaging, Athinoula A. Martinos Center for Biomedical Imaging, Massachusetts General Hospital, Assistant Professor of Radiology, Harvard Medical School*

10:30-11:00am Break (Mezzanine Pre-Function)

### General Session (Grand Ballroom A)

11:00-12:40pm **Therapeutics**

*Moderators: Alison K. Criss, PhD and Joanna Hicks, PhD*

11:00-11:20am **Novel EptA inhibitors increase the susceptibility of *Neisseria gonorrhoeae* to killing by innate immune defenses** - *Charlene Kahler (Australia)*

11:20-11:40am **Combatting antibiotic resistance in *Neisseria gonorrhoeae* by targeting the final enzyme in cysteine biosynthesis, CysK** - *Jack McGarvie (New Zealand)*

11:40-12:00pm **Discovery of novel compounds to combat multi-drug resistant gonorrhoea** - *Evgeny Semchenko (Australia)*

12:00-12:20pm **Development of a humanized monoclonal antibody against *Neisseria gonorrhoeae*** - *Sanjay Ram (USA)*

12:20-12:40pm **Structure of anti-gonococcal lipooligosaccharide antibody bound to mimetic peptide vaccine informs therapeutic and vaccine strategies** - *Peter Beernink (USA)*

12:40pm **Lunch On your Own/Time to Explore Boston**  
(Visit the registration desk to purchase tickets if available)

## Thursday 9/28/2023

7:30-7:30pm Registration (Mezzanine Pre-Function)

8:00-8:50am Registration (Avenue 34)

### General Session (Grand Ballroom A)

8:50am Announcements

8:55am **Introduction of Keynote** - *Dominique A. Caugant, PhD*

9:00-9:45am **Keynote - On the Cusp of a World Without Epidemic Meningitis** - *Marie-Pierre Preziosi, MD, PhD*

9:45-10:25am **Genomics**

*Moderators: Michael Jennings, PhD and Ana Paula Lourenço, PhD*

9:45-10:05am **Characterization of recombination events among co-circulating populations of *Neisseria gonorrhoeae* and *Neisseria meningitidis* in the U.S**  
*Sandeep Joseph (USA)*

10:05-10:25am **Transcriptome-guided metabolic network analysis reveals rearrangements of carbon flux distribution in *Neisseria gonorrhoeae* during neutrophil co-culture**  
*Aimee Potter (USA)*

10:25-10:55am Break (Mezzanine Pre-Function)

### General Session (Grand Ballroom A)

10:55-11:35am **Genomics**

*Moderators: Michael Jennings, PhD and Ana Paula Lourenço, PhD*

10:55-11:15am **Metatranscriptomic Analysis Identifies Sex Specific Coordinated Processes Between the Host Environment and *Neisseria gonorrhoeae* During Mucosal Infection** - *Ryan McClure (United States)*

11:15-11:35am **CRISPR RNA regulates apoCas9 mediated viral memorization in meningococci**  
*Yan Zhang (USA)*

11:50 - 1:45pm **Buffet Lunch - Open to All** (Avenue 34)

**Meningococcal Disease, Forgotten But Not Gone Lunch Symposium** - *Sponsored by Sanofi*

This workshop will focus on educating attendees about current epidemiology and other key issues around invasive meningococcal disease and its prevention, including information about recent outbreaks in the US and abroad, within the context of meningococcal vaccine development over the past 45 years. Distinguished speakers Dr. Tina Tan and Dr. Steve Pelton will present relevant data and lead a discussion about current issues in disease prevention through immunization. This discussion will include a presentation by Dr. Katherine Galarza focused on new and pivotal data from recent meningococcal vaccine studies. The learning objective for this workshop is to raise the awareness of IPNC attendees about meningococcal vaccines, recent epidemiologic data, and the importance of vaccination against meningococcal disease in a changing landscape.

### General Session (Grand Ballroom A)

2:00-3:40pm **Bacterial Pathogenesis**

*Moderators: Hank Seifert, PhD and Jennifer L. Edwards, PhD*

2:00-2:20pm **Discovery of a novel widespread family of Specific Single-Stranded Nucleases (Ssn) involved in the virulence and natural competence of *N. meningitidis***  
*Martin Chenal (Canada)*

2:20-2:40pm **Methionine Sulfoxide Reductase (MsrA/B) of Pathogenic *Neisseria* Moonlights as a Complement Component 5a Binding Protein** - *Michael Jennings (Australia)*

- 2:40-3:00pm **Evolution to serum resistance through phase variable opa genes**  
*Lisa Frielinghaus (USA)*
- 3:00-3:20pm **Investigating the role of lipooligosaccharide sialylation in Neisseria gonorrhoeae-neutrophil interactions** - *Amaris Cardenas*
- 3:20-3:40pm **Identifying factors important for the survival of Neisseria gonorrhoeae in the presence of neutrophils** - *Vera Kozjak-Pavlovic (Germany)*
- 3:40-7:00pm On Your Own
- 7:00-12:00am **Conference Banquet Dinner (This dinner is now full)**  
(State Room, Boston, MA - Bus Transportation Provided)

## Friday 9/29/2023

- 7:30-1:00pm Registration(Mezzanine Pre-Function)
- 8:00-8:50am Breakfast (Avenue 34)

### General Session (Grand Ballroom A)

- 8:50am Announcements
- 8:55am **Introduction of Keynote** - *Odile B. Harrison, PhD*
- 9:00-9:45am **Keynote - 25 years of MLST** - *Martin C.J. Maiden, PhD, FRCPath, FMedSci*
- 9:45-10:25am **Epidemiology and Clinical Disease**  
*Moderators: Helen Marshall, AM, MBBS, MD, MPH, DCH, FPHAA, FAHMS and Katherine Hsu, MD, MPH*
- 9:45-10:05am **Bacterial Meningitis Epidemiology in Burkina Faso and Niger - High-Risk Countries in the Meningitis Belt of Sub-Saharan Africa, 2016-2021**  
*Veronica Pinell-McNamara (USA)*
- 10:05-10:25am **The epidemiology of invasive meningococcal disease after the withdrawal of COVID-19 control measures in England** - *Helen Campbell (UK)*
- 10:25-10:40am Break (Mezzanine Pre-Function)

### General Session (Grand Ballroom A)

- 10:40-12:00pm **Epidemiology and Clinical Disease**  
*Moderators: Robin Ingalls, MD and Dominique A. Caugant, PhD*
- 10:40-11:00am **Invasive meningococcal disease trends, South Africa, 2018-2022**  
*Mignon du Plessis (South Africa)*
- 11:00-11:20am **A microbiological and clinical review of meningococcal eye infections in England: 2010-2022.** - *Stephen Clark (UK)*
- 11:20-11:40am **Comparison of Disease and Carriage Meningococcal Isolates in the UK in 2018**  
*Jeremy Carr (UK)*
- 11:40-12:00pm **Longitudinal Meningococcal Carriage in Adolescents and Young adults in South Australia 2017-2020** - *Helen Marshall (Australia)*
- 12:00pm **Meeting Wrap Up and Announcement of next IPNC Meeting**
- 12:15pm Meeting Adjourns