

Sunday 9th October 2022

09:00 – 17:00 Registration set up, exhibition, posters

14:00-17:30 Workshops

1. New approaches to diagnosis and treatment

Facilitators: Anne von Gottberg (South Africa), David Lewis (Australia)

2. Gonococcal vaccines

Facilitators: Ann Jerse (USA), Sanjay Ram (USA), Margaret Bash (USA)

3. Applications of omics

Facilitators: Stephen Bentley (UK), Jolynne Mokaya (Kenya/UK)

18:00-20:30 Welcome Reception (Lagoon Beach Hotel)

Monday 10th October 2022

07:30 - Registration

09:00-09:15 **Welcome address – Anne von Gottberg/Mignon du Plessis (South Africa)**

09:15-10:55 *Meningitis in Africa*

Chairs: Dominique Caugant (Norway), Andre Bita Fouda (WHO-AFRO)

09:15-09:45 Plenary: Brenda Kwambana-Adams (UK)

09:45-10:00 **Rito Mikhari (South Africa)**. Estimated coverage of MenB vaccine target protein types among serogroup B invasive meningococcal disease isolates in South Africa, 2016-2020 (abstract no. 296)

10:00-10:15 **Adodo Sadjì (Togo)**. The epidemiology of bacterial meningitis in four northern regions of Togo, 2016-2019 (abstract no. 137)

10:15-10:30 **Grace Olanipekun (Nigeria)**. Etiologic agents of non-epidemic meningitis among pediatric patients in Nigeria: comparison of blood cultures with culture and PCR testing of CSF (abstract no. 247)

10:30-10:45 **Rachel Charles-Amaza (Nigeria)**. Laboratory-based surveillance of *Neisseria meningitidis* in a cerebrospinal meningitis outbreak, Nigeria, 2017-2022 (abstract no. 337)

10:45-10:55 Q&A

11:00-11:30 Coffee break

11:30-12:55 *Host Defences and Immune Response*

Chairs: Hayley Lavender (UK), David Turner (UK)

11:30-11:45 **W. Song (USA)**. *Neisseria gonorrhoeae* infection modulates the local immune environment in the human cervix (abstract no. 82)

11:45-12:00 **J. Laver (UK)**. Human nasal infection with chromosomally transformed *Neisseria lactamica* induces heterologous antigen-specific immunity (abstract no. 143)

12:00-12:15 **N. Weyand (USA)**. Co-culture serum bactericidal assay: an assay for investigating the contributions of membrane-associated or soluble complement inhibitors to immune invasion by *N. gonorrhoeae* during infection of epithelial cells (abstract no. 224)

12:15-12:30 **Kenny Lidberg (Sweden)**. Host cell and lactobacilli-derived lactate promote meningococcal proliferation, biofilm formation, and microcolony dispersal rate (abstract no. 294)

12:30-12:45 **Arie van der Ende (Netherlands)**. Structure of the meningococcal capsular polysaccharide affects *Neisseria meningitidis* virulence in a zebrafish embryo infection model (abstract no. 265)

12:45-12:55 Q&A

13:00-14:20 Lunch

14:20-15:45 *Genomics and Gene Regulation*

Chairs: William Shafer (USA), Susanne Jacobsson (Sweden)

14:20-14:35 **Caroline Genco (USA)**. Global gene co-expression network analysis of *Neisseria gonorrhoeae* and the human host during mucosal infection reveals coordinated interspecies responses (abstract no. 208)

14:35-14:50 **Martin Chenal (Canada)**. Discovery of a site-specific single-stranded nuclease (SsnA) involved in the virulence and competence of *Neisseria meningitidis* (abstract no. 330)

14:50-15:05 **Mercy Kimani (UK)**. Analysis of associations between phase variation states and meningococcal disease and carriage traits using high throughput phenotypic testing (abstract no. 263)

15:05-15:20 **A. Figueredo (USA)**. Defining the transcriptional response of *Neisseria gonorrhoeae* to glucose and L-lactate (abstract no. 107)

15:20-15:35 **Frederic Veyrier (Canada)**. Evolution of multicellular longitudinally dividing oral cavity symbionts (*Neisseriaceae*) (abstract no. 55)

15:35-15:45 Q&A

15:45-16:15 Coffee break

16:30 - 18:00 **Poster session 1 – even numbers**

Tuesday 11th October 2022

08:45-10:10 *Meningococcal Vaccines and Impact*

Chairs: Ian Feavers (UK), Susan Meiring (South Africa)

- 08:45-09:00 **Helen Marshall (Australia).** 4CMenB vaccine impact on meningococcal B disease, nasopharyngeal carriage of *Neisseria meningitidis* and gonorrhoea following introduction of an infant and adolescent program in South Australia (abstract no. 199)
- 09:00-09:15 **Niranjan Bhat (USA).** Antibody persistence and booster responses four years following infant vaccination with MenAfriVac in healthy Malian children (abstract no. 177)
- 09:15-09:30 **Katharine Looker (UK).** The epidemiological impact of adolescent 4CMenB vaccination on *Neisseria gonorrhoeae* infection in England: a modelling study (abstract no. 37)
- 09:30 -09:45 **Martin Maiden (UK).** Integrating genomic data for public health use: the traffic light system for protein-based meningococcal vaccines (abstract no. 111)
- 09:45-10:00 **Henju Marjuki (CDC, USA).** Potential cross-protection of serogroup B meningococcal vaccine against meningococcal urethritis (abstract no. 31)
- 10:00-10:10 Q&A
- 10:10-10:40 **Coffee break**

10:40-12:25 *Epidemiology/Molecular Epidemiology*

Chairs: Martin Maiden (UK), Mignon du Plessis (South Africa)

- 10:40-11:30 **Plenary: Kanny Diallo (Cote d'Ivoire) and Odile Harrison (UK)**
- 11:30-11:45 **Sualah Haris Musah (Ghana).** Molecular characteristics and antimicrobial resistance of gonococcal isolates in Northern Ghana (abstract no. 253)
- 11:45-12:00 **Lucy McNamara (USA).** Meningococcal disease in people living with HIV reported through active surveillance in the United States, 2009-2019 (abstract no. 272)

12:00-12:15 **Lex Leong (Australia)**. Whole genome sequencing and 4CMenB predicted coverage of *N. meningitidis* carriage in senior school students in South Australia (abstract no. 126)

12:15-12:25 Q&A

12:25-13:55 Lunch

13:55-15:35 *Antibiotic Resistance, Diagnostics and Treatment*

Chairs: Adriana Le Van (USA), Magnus Unemo (Sweden)

13:55-14:10 **Katya Fernandez (WHO-AFRO)**. Target product profile for a new generation of *in vitro* diagnostic tests to identify multiple meningitis pathogens (abstract no. 156)

14:10-14:25 **Jutamas Shaughnessy (USA)**. Development of complement factor H based immunotherapeutic molecules in tobacco plants against multidrug-resistant *Neisseria gonorrhoeae* (abstract no. 186)

14:25-14:40 **Lorenzo Pezzoli (WHO-AFRO)**. Field evaluation of two new meningitis lateral flow rapid diagnostic tests in Niger and Burkina Faso (abstract no. 77)

14:40-14:55 **Alje van Dam (Netherlands)**. Emergence and spread of novel *Neisseria gonorrhoeae* clone MLST7827 with reduced susceptibility to extended-spectrum cephalosporins (abstract no. 151)

14:55-15:10 **Hayley Lavender (UK)**. Novel antibody-peptide conjugates against multidrug-resistant *N. gonorrhoeae* (abstract no. 233)

15:10-15:25 **Susanne Jacobsson (Sweden)**. Pharmacodynamic evaluation of zoliflodacin dosing, bacterial kill and resistance suppression in *Neisseria gonorrhoeae* using a dynamic hollow fiber infection model (abstract no. 298)

15:25-15:35 Q&A

15h35-16h05 Coffee break

16:15 - 17:45 *Poster session 2 – odd numbers*

Wednesday 12th October 2022

07:30 - Registration

08:30-09:55 *Surface Structures*

Chairs: Arie van der Ende (Netherlands), Aleksandra Sikora (USA)

08:30-09:00 Plenary: Alison Criss (USA)

09:00-09:15 **Anastasia Unitt (UK).** The origins of mosaic *penA* sequences in *Neisseria gonorrhoeae*: exploring a large *Neisseria* spp. genetic dataset (abstract no. 274)

09:15-09:30 **Hank Seifert (USA).** Mechanisms controlling pilin antigenic variation of the pathogenic *Neisseria* (abstract no. 281)

09:30-09:45 **Andreea Waltmann (USA).** Loss-of-function mutation in MtrCDE does not change the infectivity and fitness of *Neisseria gonorrhoeae* (abstract no. 187)

09:45-09:55 Q&A

09:55-10:20 Coffee break

10:20-12:00 *Physiology and Metabolism*

Chairs: Joseph Dillard (USA), Jutamas Shaughnessy (USA)

10:20-10:35 **Gursonika Binopal (Canada).** Revealing a central role for the cylindrical protease, Clp, in meningococcal colonization and disease (abstract no. 236)

10:35-10:50 **Aimee Potter (USA).** Dinner date: Metabolic interaction between *Neisseria gonorrhoeae* and neutrophils (abstract no. 10)

10:50-11:05 **Joseph Dillard (USA).** Wisc M YnhG acts as a transpeptidase to create Dap-Dap crosslinks in the gonococcal cell wall (abstract no. 164)

11:05-11:20 **Aleksandra Sikora (USA).** *Neisseria gonorrhoeae* vaccine candidate Slam2 influences hemoglobin metabolism (abstract no. 93)

11:20-11:35 **Evgeny Semchenko (Australia).** The multifunctional role of the gonococcal neisserial heparin binding Antigen (NHBA) in virulence (abstract no. 242)

11:35-11:50 **Jocelyn Ray (USA).** Role of the outer membrane transporters TdfH and TdfJ in productive infection of human ectocervical cells by *N. gonorrhoeae* (abstract no. 73)

11:50-12:00 Q&A

12:00-18:00 Afternoon free/social program

Thursday 13th October 2022

07:30 - Registration

08:30-09:30 *Molecular & Cellular Biology*

Chairs: Charlene Kahler (Australia), Vonetta Edwards (USA)

08:30-08:50 **Joanna Hicks (New Zealand)**. Can the gonococcus synthesis cysteine? Investigation of sulfurtransferase and cysteine synthesis enzymes as potential therapeutic targets (abstract no. 17)

08:50-09:10 **Wendy Geslewitz (USA)**. Development and implementation of an inducible Type I-C CRISPR-Interference System in *Neisseria gonorrhoeae* (abstract no. 284)

09:10-09:30 **E. Rodriguez (USA)**. Role of gonococcal *ispD* in the meningococcal urethral clade US_NmUC (abstract no. 328)

09:30-10h00 Coffee break

10:00-11:55 *Gonococcal Vaccines*

Chairs: David Lewis (Australia), Margaret Bash (USA)

10:00-10:30 Plenary: Kate Seib (Australia)

10:30-10:45 **Esphita Islam (Canada)**. Evaluation of parenterally delivered vaccine adjuvant formulations in mediating mucosal protection against pathogenic *Neisseria* (abstract no. 238)

10:45-11:00 **Ann Jerse (USA)**. The cross-protective efficacy of the serogroup B meningococcal 4CMenB vaccine against experimental gonococcal infection is less pronounced in Chlamydia-infected mice (abstract no. 334)

11:00-11:15 **Calman MacLennan (UK)**. GonoVac, a candidate parenteral NOMV gonococcal vaccine that clears gonococci faster than Bexsero in the mouse vaginal infection model (abstract no. 214)

11:15-11:30 **Paola Massari (USA)**. Discovery and immune characterization of new *N. gonorrhoeae* vaccine antigens expressed during natural mucosal infection (abstract no. 115)

11:30-11:45 **Jamie Fegan (Canada)**. Evaluating vaccine-mediated protection against targets that overcome nutritional immunity in mouse models of gonococcal colonization (abstract no. 211)

11:45-11:55 Q&A

11:55-13:10 Lunch

13:10-15:05 *Antibiotic Resistance, Diagnostics and Treatment*

Chairs: Ann Jerse (USA), Johan Melendez (USA)

13:10-13:25 **Susan Meiring (South Africa)**. *Neisseria* in South Africa: an update (abstract no. 130)

13:25-13:40 **Johan Melendez (USA)**. Molecular epidemiology and phylogeny of high-level azithromycin resistance in *Neisseria gonorrhoeae* (abstract no. 237)

13:40-13:55 **Ravi Kant (India)**. *In silico* Identification of novel drug targets in *Neisseria gonorrhoeae* by using homology modelling, drug docking studies of a candidate enzyme Murl: Computational approach to combat antimicrobial resistance (abstract no. 3)

13:55-14:10 **Samantha Palace (USA)**. RNA polymerase mutations cause cephalosporin resistance in clinical *Neisseria gonorrhoeae* isolates (abstract no. 124)

14:10-14:25 **Anne Maina (Kenya)**. Symptomatic approach to *Neisseria gonorrhoeae* management performs better in men than women: a cross-sectional study in Nairobi, Kenya (abstract no. 60)

14:25-14:40 **Alain Iradukunda Mahoro (Rwanda)**. Antimicrobial susceptibility pattern of *Neisseria gonorrhoeae* isolated from male patients attending Biryogo Health Centre in Kigali, Rwanda (abstract no. 249)

14:40-14:55 **Simon Peters (Germany)**. Click-Correlative light electron microscopy for imaging and tracking of functionalized antibacterial sphingolipids in *Neisseria meningitidis* (abstract no. 63)

14:55-15:05 Q&A

15:05-15h30 Coffee break

15:30-17:25 *Meningococcal Vaccines and Impact*

Chairs: Lee Harrison (USA), Brenda Kwambana-Adams (UK)

- 15:30-15:45 **Fadil Bidmos (UK).** Reverse Vaccinology 2.0 approach to meningococcal vaccine antigen discovery (abstract no. 171)
- 15:45-16:00 **Isabel Delany (Italy).** Interrogation of Human monoclonal antibodies induced by Bexsero to identify protective antigens contained in the OMV component (abstract no. 204)
- 16:00-16:15 **Jeremy Carr (UK).** Impact of the UK quadrivalent MenACWY vaccination programme on oropharyngeal carriage of meningococci in adolescents aged 16-19 years (abstract no. 203)
- 16:15-16:30 **Olof Säll (Sweden).** Predicted strain coverage for Bexsero and Trumenba vaccines among invasive meningococcal isolates in Sweden, 2014-2018 (abstract no. 5)
- 16:30-16:45 **Elissa Currie (Canada).** Protection against *Neisseria meningitidis* nasal colonization is mediated by antibody dependent opsonophagocytosis (abstract no. 215)
- 16:45-17h00 **Shamez Ladhani (UK).** The Impact of the meningococcal B vaccine, 4CMenB, on group W disease in England (abstract no. 134)
- 17h00-17h15 **Milou Ohm (Netherlands).** Protection against invasive meningococcal disease and vaccination policy in the Netherlands (abstract no. 299)
- 17h15-17h25 Q&A

18:30 - late Gala dinner

Friday 14th October 2022

08:45-10:35 *Antibiotic Resistance, Diagnostics and Treatment*

Chairs: Anne von Gottberg (South Africa), Robert Read (UK)

08:45-09:15 Plenary: Rob Nicholas (USA)

09:15-09:30 **Rebecca Howie (USA)**. Antimicrobial resistance in *N. meningitidis* serogroup Y— United States, 2019-present (abstract no. 266)

09:30-09:45 **Sanjay Ram (USA)**. DNA-encoded anti-lipooligosaccharide monoclonal antibody engineered to enhance complement activation as a vaccination strategy against gonorrhoea (abstract no. 145)

09:45-10:00 **Adriana Le Van (USA)**. The in vivo fitness defect conferred by a commonly isolated fluoroquinolone resistance-conferring *parC* mutation is restored by the selection of compensatory mutations during experimental murine infection (abstract no. 322)

10:00-10:15 **Mingliang Chen (China)**. Decreased susceptibility of meningococcus to penicillin in Shanghai, China during 1965 and 2019 (abstract no. 15)

10:15-10:30 **Stephen Clark (UK)**. An investigation into rifampicin hetero-resistance among invasive meningococci in the UK (abstract no. 132)

10:30-10:35 Q&A

10:35-11:00 Coffee break

11:00-12:30 *Host Defences and Immune Response*

Chairs: Peter Rice (USA), Gregory Moe (USA)

11:00-11:15 **Adam Dale (UK)**. The commensal *Neisseria lactamica* induces cross-reactive human B cell responses against the pathogen *Neisseria meningitidis* (abstract no. 148)

11:15-11:30 **Lacie Werner (USA)**. Human serum suppression of neutrophil anti-gonococcal activity (abstract no. 9)

11:30-11:45 **Anna Bojagora (Canada)**. Decidualization of the endometrium as sequelae caused by gonorrhoea-induced uterine inflammation (abstract no. 89)

- 11:45-12:00 **Evelyn Kurt-Jones (USA)**. USA estrogen-induced interferon-epsilon expressed in the female genital tract allows *N. gonorrhoeae* to evade innate immune clearance (abstract no. 327)
- 12:00-12:15 **Diane Gbesemete (UK)**. Controlled human infection with *Neisseria lactamica* in Malian adults (abstract no. 267)
- 12:15-12:20 Q&A
- 12:20-12:30 Closing and announcement of next meeting (IPNC 2023, Boston USA)**