

Scientific Program

All events to be held in Merrill Hall unless noted otherwise (see map on page 8)

Sunday, Sept. 23

- 15:00 – 18:00 Guest Check-In (Hearst Social Hall) and Conference Registration (Merrill Hall)
- 18:00 – 19:00 Dinner (Crocker Dining Hall)
- 19:00 – 19:15 Opening Ceremony and Welcome (Merrill Hall)
- 19:15 – 20:00 Keynote address:
Cell wall and *H. pylori* pathogenesis: from innate immune activation to cell shape
Nina Salama (Seattle, USA)
- 20:00 – 21:30 Welcome Reception (BBQ Area / Campus Circle)

Monday, Sept. 24

- 07:30 – 09:00 Breakfast (Crocker Dining Hall)

Session I: Meningococcal Vaccines

(Moderators: Andrew Gorringer (UK) and Lucy McNamara (USA))

- 08:30 – 08:50 **Impact of 4CMenB against group B meningococcal disease in one and two year-olds in England**
Shamez Ladhani (London, UK)
- 08:50 – 09:10 **Genetic Meningococcal Antigen Typing System (gMATS): a genotyping tool that predicts 4CMenB strain coverage in US and other countries**
Alessandro Muzzi (Siena, Italy)
- 09:10 – 09:30 **Whole-blood transcriptomics provides novel insights into the molecular mechanisms underlying the reactogenicity of the capsular group B meningococcal vaccine, 4CMenB**
Dylan Sheerin (Oxford, UK)
- 09:30 – 09:50 **Using gene expression analysis to understand the immune response to the meningococcal outer membrane vesicle vaccine MenPF**
Manish Sadarangani (Vancouver, Canada)
- 09:50 – 10:10 **Classical or alternative complement pathway inhibition alone does not prevent whole blood killing of antibody-coated *N. meningitidis* or *S. pneumoniae***
Lisa Lewis (Worcester, USA)
- 10:10 – 10:35 Coffee Break

Session I (continued): Meningococcal Vaccines

- 10:35 – 10:55 **Differential effects of complement inhibitors on serum bactericidal activity against non-groupable meningococcal isolates recovered from patients treated with eculizumab**
Dan Granoff (Oakland, USA)
- 10:55 – 11:15 **Revealing processes that confer immunity to nasal infection by *Neisseria meningitidis***
Elissa Currie (Toronto, Canada)
- 11:15 – 11:35 **A meningococcal native outer membrane vesicle vaccine with genetically attenuated endotoxin and an overexpressed Factor H binding protein mutant elicits protective antibodies against both meningococcus and gonococcus**
Peter Beernink (Oakland, USA)
- 11:35 – 11:55 **Exploiting the translocation of surface lipoproteins from meningococcus for a better understanding of OMV as a vaccine delivery platform**
Isabel Delany (Siena, Italy)
- 12:00 – 13:00 Lunch (Crocker Dining Hall)

Session II: Gonococcal Vaccines

(Moderators: Paola Massari (USA) and Myron Christodoulides (UK))

13:30 -13:55 Plenary Session: **Epidemiological evidence for ability of meningococcal vaccines to elicit protection against gonococcus**
Lee Harrison (Pittsburgh, USA)

13:55 – 14:10 **The group B meningococcal vaccine Bexsero induces antibodies that recognize several candidate gonorrhoea vaccine targets and shows protective efficacy against experimental *Neisseria gonorrhoeae* genital tract infection in mice**
Kristie Connolly (Bethesda, USA)

14:10 – 14:30 **The serogroup B meningococcal vaccine Bexsero elicits antibodies to *Neisseria gonorrhoeae***
Kate Seib (Gold Coast, Australia)

14:30 – 14:45 **Development and characterization of native Rmp-deficient *Neisseria gonorrhoeae* outer membrane vesicles as an anti-gonococcal vaccine**
Lee Wetzler (Boston, USA)

14:45 – 15:05 **Immunization with porin-deficient meningococcal outer membrane vesicles enhances gonococcal clearance in a mouse model of infection**
Kathryn Matthias (Silver Spring, USA)

15:10 – 15:35 Coffee Break

Session II (continued): Gonococcal Vaccines

15:35 – 15:55 **The use of novel hybrid antigens of the bacterial transferrin receptor for protection against *Neisseria meningitidis* and *Neisseria gonorrhoeae***
Jamie Fegan (Toronto, Canada)

15:55 – 16:15 **Potential of efficacy of 2C7 vaccine antibody by enhancing IgG Fc hexamer formation: application as a candidate immunotherapeutic**
Sunita Gulati (Worcester, USA)

16:15 – 16:35 **Bactericidal activity against pathogenic *Neisseria* strains of human vaccine-induced antibody to the conserved microbial surface polysaccharide, poly-N-acetyl glucosamine (PNAG)**
Collette Cywes-Bentley (Boston, USA)

16:35 – 16:55 **Open label randomized trial to test the efficacy of a human monoclonal antibody against microbial poly-N-acetylglucosamine (PNAG) in preventing experimental urethral gonococcal infection in healthy men**
Marcia Hobbs (Chapel Hill, USA)

18:00 – 19:00 Dinner (Crocker Dining Hall)

19:00 – 21:00 **Poster Session I** (Odd-numbered posters)
Fred Farr Hall: P1-P111
Kiln Hall: P113-P171

21:30 – 22:30 S'more Pit event (BBQ Area / Campus Circle)

Tuesday, Sept. 25

07:30 – 09:00 Breakfast (Crocker Dining Hall)

Session III: Host-Pathogen Interactions

(Moderators: Marcia Hobbs (USA) and Nathan Weyand (USA))

08:30 – 08:50 **The distinct roles of the anaphylatoxin receptors C5aR1, C5aR2 and C3aR during experimental invasive meningococcal disease**
Kay Johswich (Weurzburg, Germany)

08:50 – 09:05 **Complement Factor H enhances nasopharyngeal adherence of *Neisseria meningitidis* in a human CEACAM1/Factor H transgenic mouse model**
Vianca Vianzon (Oakland, USA)

- 09:05 – 09:25 **Type IV pilus retraction is essential for *Neisseria musculi* persistent colonization *in vivo***
Katherine Rhodes (Tuscon, USA)
- 09:25 – 09:40 ***Neisseria gonorrhoeae* – *Chlamydia trachomatis* co-infections: Evidence for cooperation at the level of pathogen – host cell interactions**
Thomas Rudel (Weurzburg, Germany)
- 09:40 – 09:55 **Suppression of Th1/Th2 responses and a lower chlamydial vaginal burden occurs in an experimental model of gonococcal/chlamydial upper reproductive tract infection**
Clare Caherty (Bethesda, USA)
- 10:00 – 10:25 Coffee Break

Session III (continued): Host-Pathogen Interactions

- 10:25 – 10:45 ***Neisseria gonorrhoeae* infectivity in the human cervix differs based on the expression of its surface molecules and the properties of epithelial cells**
Wenxia Song (College Park, USA)
- 10:45 – 11:00 ***Neisseria meningitidis* Factor H binding protein binds to a receptor on lymphocytes and monocytes and prevents bacteria-mediated cell lysis**
Johid Malik (Oakland, USA)
- 11:00 – 11:20 **Properly folded PorB from *Neisseria gonorrhoeae* suppresses dendritic cell-mediated T cell proliferation**
Joseph Duncan (Chapel Hill, USA)
- 11:20 – 11:40 **Endocervical and neutrophil lipoxygenases coordinate neutrophil transepithelial migration to *Neisseria gonorrhoeae***
Alison Criss (Charlottesville, USA)
- 11:40 – 12:00 **SliC is a surface-displayed lipoprotein that is required for the anti-lysozyme strategy during *Neisseria gonorrhoeae* infection**
Aleksandra Sikora (Corvallis, USA)
- 12:00 – 18:00 Free afternoon/Cultural activities (boxed lunch available by pre-registration)
- 18:00 – 19:00 Dinner (Crocker Dining Hall)
- Staggered Workshops** (note overlapping times)
- 19:00 – 20:30 **Animal and cellular models** (Merrill Hall)
(Moderators: Jenn Edwards (USA) and Greg Moe (USA))
- 19:45 – 21:15 **Therapeutic complement inhibitors and meningococcal disease** (Chapel)
(Moderators: Dan Granoff (USA) and Sanjay Ram (USA))
- 20:30 – 22:00 **“OMICS” software tools** (Merrill Hall)
(Moderators: Odile Harrison (UK) and Aleksandra Sikora (USA))

Wednesday, Sept. 26

- 07:30 – 09:00 Breakfast (Crocker Dining Hall)

Session IV: Epidemiology and Population Genomics

(Moderators: Nicole Basta (USA) and Mignon du Plessis (South Africa))

- 08:30 – 08:40 **Bacterial meningitis epidemiology in 5 countries in the meningitis belt of sub-Saharan Africa, MenAfriNet, 2015-2017**
Discussion following next presentation
Heidi Soeters (Atlanta, USA)
- 08:40 – 08:55 **Meningococcal meningitis outbreaks in the African meningitis belt after MenAfrivac introduction, 2011-2017**
Olivier Ronveaux (Brenthonne, France)
- 08:55 – 09:15 **Phylogenetic associations and regional spread of meningococcal strains in the meningitis belt post-MenAfriVac**
Nadav Topaz (Atlanta, USA)

09:15 – 09:35 **Impact of quadrivalent meningococcal conjugate vaccine (MenACWY) in adolescents – United States**
Sarah Mbaeyi (Atlanta, USA)

09:35 – 09:55 **Invasive meningococcal disease associated with a novel urethritis clade of *Neisseria meningitidis* – United States, 2013–2017**
Sara Oliver (Atlanta, USA)

10:00 -10:25 Coffee Break

Session IV (continued): Epidemiology and Population Genomics

10:25 – 10:35 **A cluster randomized controlled trial in senior school students to assess the impact of 4CMenB on *N. meningitidis* carriage and determine any herd protection**
Discussion following next presentation
Helen Marshall (Adelaide, Australia)

10:35 – 10:50 **Meningococcal carriage and teenage behaviour at periods of high and low meningococcal disease incidence**
Jenny MacLennan (Oxford, UK) (10 min.)

10:50 – 11:10 **Oropharyngeal microbiome of a college population following a meningococcal disease outbreak**
Adam Retchless (Atlanta, USA)

11:10 – 11:30 **Within-person evolution of *Neisseria meningitidis* carriage strains in Maryland and Georgia, USA**
Mustapha Mustapha (Pittsburgh, USA)

11:30 – 11:50 **The meningococcal phasome impacts the switch from carriage to invasive disease differentially depending on clonal complex**
Christopher Bayliss (Leicester, UK)

12:00 – 13:00 Lunch (Crocker Dining Hall) (or boxed lunch for Sponsored Symposium by pre-registration)

Sponsored Symposium: Prevention of meningococcal disease through vaccination

GSK provided funding for this session but had no part in the development or delivery of the contents of the session

12:15 – 12:20 **Introduction**
Shamez Ladhani (London, UK)

12:20 – 12:35 **Impact and effectiveness of 4CMenB (Bexsero®) on MenB disease in infants in the UK**
Shamez Ladhani (London, UK)

12:35 – 12:55 **Evaluating MenB strains causing invasive disease in children eligible for 4CMenB (Bexsero®)**
Jay Lucidarme (Manchester, UK)

12:55 – 13:15 **The role of the Meningococcal Reference Unit in supporting MenB outbreak investigations**
Stephen Clark (Manchester, UK)

13:15 – 13:30 **Impact and effectiveness of the adolescent MenACWY programme to control a national outbreak of MenW disease**
Shamez Ladhani (London, UK)

13:30 – 13:45 **Discussion/Summary**
Shamez Ladhani (London, UK)

Session V: Genomics and Gene Regulation

(Moderators: Christopher Bayliss (UK) and Bianca Stenmark (Sweden))

14:00 – 14:20 **Using the *Neisseria gonorrhoeae* core genome to examine gonococcal populations**
Odile Harrison (Oxford, UK)

- 14:20 – 14:40 **Global network analysis of *Neisseria gonorrhoeae* reveals coordination within regulatory, host interaction, and environmental responses**
Ryan McClure (Richland, USA)
- 14:40 – 14:55 **More recombination from *Neisseria gonorrhoeae* into *Neisseria meningitidis* than vice-versa**
Neil MacAlasdair (Cambridge, UK)
- 14:55 – 15:15 **Repression of the *Neisseria gonorrhoeae* lactate permease gene *lctP* by the GntR-type regulator GdhR**
Julio Ayala (Atlanta, USA)
- 15:20 – 15:45 Coffee Break

Session V (continued): Genomics and Gene Regulation

- 15:45 – 16:05 **Gene expression profile of *Neisseria meningitidis* and carriage density in pharyngeal carriers**
Yenenesh Tekletsion (Bristol, UK)
- 16:05 – 16:25 **Expression of the gonococcal type IV secretion system is altered by physiologically-relevant environmental factors**
Melanie Callaghan (Madison, USA)
- 16:25 – 16:45 **Epigenetic gene regulation by phase variable DNA methyltransferases ModA11, ModA12 and ModA13 in pathogenic *Neisseria***
Freda Jen (Gold Coast, Australia)
- 18:00 - 18:30 Bus transportation to Monterey Bay Aquarium
- 18:00 – 22:30 Gala Banquet at Monterey Bay Aquarium (prior Banquet ticket purchase required)
- 22:00 – 22:30 Bus transportation to Asilomar Conference Grounds

Thursday, Sept. 27

- 07:30 – 09:00 Breakfast (Crocker Dining Hall)

Session VI: Molecular Physiology and Metabolism

(Moderators: Joanna Hicks (New Zealand) and Ryan Schaub (USA))

- 09:30 – 09:50 **Toward a comprehensive understanding of peptidoglycan fragment generation and release in *Neisseria gonorrhoeae* and *Neisseria meningitidis***
Joseph Dillard (Madison, USA)
- 09:50 – 10:10 **Retractive Type IV Pilus forces establish spatiotemporal gene expression patterns in *Neisseria gonorrhoeae* microcolonies**
Nicolas Biais (Brooklyn, USA)
- 10:10 – 10:30 **Targeting ClpP – a proteolytic machinery in *Neisseria***
Gursonika Binopal (Toronto, Canada)
- 10:30 – 10:45 **Elucidating the function of a novel drug target and an essential GTPase Obg by proteome and metabolome perturbation analysis**
Ryszard Zielke (Corvallis, USA)
- 10:50 – 11:15 Coffee Break

Session VII: Surface Structures and Cell Envelope

(Moderators: Trevor Moraes (Canada) and Vladimir Pelicic (UK))

- 11:15 – 11:40 Plenary Session: **Type IV pili, the meningococcal Swiss knife**
Xavier Nassif (Paris, France)
- 11:40 – 12:00 **Glycan-interactions of *Neisseria meningitidis* and *Neisseria gonorrhoeae***
Evgeny Semchenko (Gold Coast, Australia)
- 12:00 – 13:00 Lunch (Crocker Dining Hall)

Session VII (continued): Surface Structures and Cell Envelope

- 13:30 – 13:50 **Watching gene transfer in *Neisseria gonorrhoeae***
Berenike Maier (Cologne, Germany)
- 13:50 – 14:10 **Structures of *Neisseria* Type IV pili**
Lisa Craig (Burnaby, Canada)
- 14:10 – 14:30 **Outer membrane proteins employed by *Neisseria gonorrhoeae* to overcome zinc restricted nutritional immunity**
Cynthia Cornelissen (Richmond, USA)
- 14:30 – 14:50 **Characterizing the pilin-mediated effect on iron homeostasis and its role in hydrogen peroxide and antimicrobial peptide resistance in *Neisseria gonorrhoeae***
Linda Hu (Chicago, USA)
- 14:55 – 15:20 Coffee Break

Oral Poster Presentations

- 15:20 – 15:50 Oral Poster Session I: Vaccines and Epidemiology
(Moderators: Vonetta Edwards (USA) and Charlene Rodrigues (UK))
- Immune persistence measured by human complement serum bactericidal activity in children immunized with MenAfriVac® as infants and administered a booster dose at five years of age**
Alexandra Reveille (Silver Spring, USA)
- Be on the TEAM (Teenagers Against Meningitis): a clinical trial evaluating the impact of two licensed group B meningococcal vaccines on pharyngeal carriage of meningococcus in adolescents**
Jeremy Carr (Oxford, UK)
- Identification of new gonococcal vaccine targets**
Phillip Balzano (Boston, USA)
- A genetically-modified native outer membrane vesicle vaccine administered by a subcutaneous/intranasal route failed to accelerate clearance of gonococcus in a heterologous mouse challenge study**
Paula Freixeiro (Oxford, UK)
- Two cases of a newly characterized *Neisseria* species**
Mustapha Mustapha (Pittsburgh, USA)
- Temporal-spatial analysis of invasive meningococcal disease in South Africa: 2005-2015**
Susan Meiring (Johannesburg, South Africa)
- 15:55 – 16:45 Oral Poster Session II: Neisserial Infection Biology and Genetics
(Moderators: Kevin Ma (USA) and Esther Shin (USA))
- Using cysteine mutation to study the mechanism of immunosuppression by *N. gonorrhoeae* PorB**
Marguerite Little (Chapel Hill, USA)
- Evolution of life cycle plasticity facilitates *Neisseria gonorrhoeae* colonization of human macrophages**
Stanimir Ivanov (Schreveport, USA)
- Neutrophil recruitment during *Neisseria meningitidis* vascular colonization requires perivascular macrophage activation**
Guillaume Dumenil (Paris, France)
- Transcriptomic changes in *Neisseria gonorrhoeae* exposed to sublethal levels of hydrogen-peroxide**
Sarah Quillin (Chicago, USA)
- Characterisation of the class II pilE promoter in *Neisseria meningitidis***
Mariya Lobonovska (Oxford, UK)

Phenotypic characterization of a defined *Neisseria gonorrhoeae* thiamine oxidase mutant and thiamine auxotrophs isolated from U.S. military treatment facilities

Adriana Le Van (Bethesda, USA)

Protein-protein interactions among the gonococcal peptidoglycanases

Krizia Perez Medina (Madison, USA)

Phase variation of Opa proteins in hypervirulent serogroup W meningococcal isolates

Neelam Dave (Leicester, UK)

Characterization of the TdfH-calprotectin interaction that enables *Neisseria gonorrhoeae* to overcome Zn-specific nutritional immunity

Michael Kammerman (Richmond, USA)

Heteroresistance to the model antimicrobial peptide polymyxin B in the emerging *Neisseria meningitidis* lineage 11.2 urethritis clade: mutations in the pilMNOPQ operon

Yih-Ling Tzeng (Atlanta, USA)

A prophylaxis and treatment for gonococcal ophthalmia neonatorum

Lori Snyder (London, UK)

18:00 – 19:00 Dinner (Crocker Dining Hall)

19:00 – 21:00 Poster Session II (Even-numbered posters)
Fred Farr Hall: P2-P110
Kiln Hall: P112-P168
Merrill Hall: OP170-OP198

Friday, Sept. 28

07:30 – 09:00 Breakfast (Crocker Dining Hall)

Session VIII: Anti-Microbial Resistance and Therapies

(Moderators: Aleksandra Sikora (USA) and Frederic Veyrier (Canada))

8:30 – 08:50 **Novel small molecules that increase the susceptibility of *Neisseria gonorrhoeae* to cationic antimicrobial peptides**

Charlene Kahler (Perth, Australia)

08:50 – 09:10 **A repurposing screen identifies drugs that block interactions between *Neisseria gonorrhoeae* and human cervical cells and that have potential to prevent and cure cervical infection in women**

Michael Jennings (Gold Coast, Australia)

09:10 – 09:30 **Three conserved residues at the N-terminal linker region of *Neisseria gonorrhoeae* FtsI are crucial for interaction with the cell division protein FtsW and penicillin binding**

Jo-Anne Dillon (Saskatoon, Canada)

09:30 – 09:45 **Azithromycin resistance through interspecific acquisition of an epistasis dependent efflux pump component and transcriptional regulator in *Neisseria gonorrhoeae***

Yonatan Grad (Boston, USA)

09:45 – 10:00 **A mosaic *mtr* sequence in *Neisseria gonorrhoeae* can increase expression of the *mtrCDE* efflux pump operon and resistance to antimicrobials by cis- and trans-acting mechanisms**

Corinne Loughlin (Atlanta, USA)

10:05 – 10:30 Coffee Break

Session VIII (continued): Anti-Microbial Resistance and Therapies

10:30 – 10:45 **Analysis of a codon deletion in the *mleN* gene in spontaneous compensatory mutants of antibiotic-resistant *Neisseria gonorrhoeae* and its role in growth and biological fitness**

Katherine Newns (Chapel Hill, USA)

10:45 – 11:00 **Spontaneously arising mutations in metabolism genes increase the biological fitness of ceftriaxone-resistant strains of *Neisseria gonorrhoeae***

Robert Nicholas (Chapel Hill, USA)

11:00 – 11:20 **Targeting Type IV pili as a novel antivirulence treatment for bacterial infections**

Marion LeBris (Paris, France)

- 11:20 – 11:30 ***Neisseria mucosa* displays inhibitory activity against other *Neisseria* species**
Discussion following next presentation
Ellen Aho (St. Paul, USA)
- 11:30 – 11:45 **Tribal Warfare: Commensal *Neisseria* kills *N. gonorrhoeae* via its DNA**
Maggie So (Tuscon, USA)
- 11:45 – 12:00 Closing, Announcement of IPNC 2020, Adjourn



LODGING	MEETING ROOMS	PARKING LOTS
Aftershow Rooms 900-922	F2	Acacia B4
Breakers East Rooms 821-832	C5	Chapel Auditorium D5
Breakers West Rooms 833-840	C5	Culver C4
Cypress Rooms 717-724	H5	Dolphin C5
Deer Lodge Rooms 1231-1190	H3	Evergreen F1
Director's Cottage Rooms 308-1924	C3	Fred Farr Forum E2
Embers Rooms 717-724	F2	Heather C4
Engineer's Cottage Rooms 901-903	G3	Kilm E3
Forest Lodge Rooms 720-721	F1	Madrone G2
Guest Inn Rooms 901-903	F2	Manzanita I & II B4
Hearth Rooms 925-936	F1	Martini G4
Live Oak Rooms 701-100	G3	Merrill Hall D4
Lodge Rooms 201-218	D4	Nauticus H4
Long View North Rooms 101-110	A3	Oak Knoll I & II C4
Long View Middle Rooms 11-20	A3	Oak Shelter F1
Long View South Rooms 121-130	A3	Sanderling D4
Manzanita Rooms 901-902	B4	Scipps D4
Oak Knoll Rooms 101-124	C4	Surf & Sand G5
Pirates' Den Rooms 501-510	G5	Toyon B4
Sand Rooms 605-610	G6	Trilon H4
Scipps Rooms 301-323	D4	Willow I & II B4
Shores 709-716 Rooms 849-856	H5	Whitehead G3
Spindrift North Rooms 844-848	C5	
Spindrift South Rooms 401-414	C6	
Stuck-up Inn Rooms 601-604	F4	
Surf Rooms 705-706	H6	
Tree Tops Rooms 801-808	H3	
Whitecaps North Rooms 809-820	C5	
Whitecaps South Rooms 801-808	D5	
Willow Inn Rooms 705-706	B4	
Windward Rooms 701-708	H5	
Woodside Rooms 122-123	G1	