20th International Conference on Bacilli and Gram-Positive Bacteria

Washington, D.C.
July 23-26, 2019

PROGRAM AND ORAL ABSTRACTS

Conference Chairs

Kumaran Ramamurthi	National Institutes of Health
Wade Winkler	University of Maryland, College Park

Scientific Committee

Briana Burton	University of Wisconsin-Madison
Patrick Eichenberger	New York University
Amy Gehring	Willliams College
Neal Hammer	Michigan State University
Shonna McBride	Emory University
Shaun Brinsmade	Georgetown University
Melanie Berkmen	Suffolk University
Joseph Sorg	Texas A&M University
Jen Herman	Texas A&M University
Prahathees Eswara	University of South Florida
Niels Bradshaw	Brandeis University
Matt Cabeen	Oklahoma State University
Catherine Wakeman	Texas Tech University

Conference logo and abstract book design by Maya Ramamurthi

PROGRAM

Tuesday, July 23

12:00-2:45 PM	**Conference Registration and Check-In**	*Grand Ballroom Lounge*
2:45-3:00 PM	**Opening Remarks**	*0224 Edward St. John*

Session 1: Cell Biology I *0224 Edward St. John*

Chair: Jen Herman, Texas A&M University

3:00-3:30 PM	**Kit Pogliano** *University of California, San Diego*
3:30-3:45 PM	**Sven Halbeldel** *Robert Koch Institute* *Novel* gpsB *suppressor genes contributing to posttranslational control of cell wall biosynthesis*
3:45-4:00 PM	**Zoe Rutter** *University of Newcastle* *Structure and function of the phosphoprotein Lm1503 in regulating peptidoglycan synthesis in Listeria monocytogenes*
4:00-4:15 PM	**Taylor Updegrove** *National Institutes of Health* *Resurrection of Ancestral GTPase Activity in an Extant Bacterial ATPase*
4:15-4:30 PM	**Luke Joyce** *The University of Texas at Dallas* *Phosphatidylcholine biosynthesis in Mitis group streptococci via a host metabolite scavenging pathway*
4:30-4:45 PM	**Georgia Squyres** *Harvard University* *Z ring assembly is regulated by FtsZ filament binding proteins*

5:00-7:00 PM	**Opening Reception**	*Grand Ballroom*

Wednesday, July 24

Session 2: Sporulation *0224 Edward St. John*

Chair: Patrick Eichenberger, New York University

8:30-9:00 AM	**Aimee Shen** *Tufts University*
9:00-9:15 AM	**Wishwas Abhyankar** *University of Amsterdam* *Understanding the Molecular Basis of Endospore Heterogeneity*
9:15-9:30 AM	**Ilka Bischofs** *MPI for Terrestrial Microbiology* *A quality-quantity tradeoff favors the rise of diverse sporulation strategies in* Bacillus subtilis
9:30-9:45 AM	**Jeremy Amon** *Harvard Medical School* *YlxY is required for effecient CwlJ activity during* B. subtilis *germination*

9:45-10:00 AM	**Adriano Henriques** *ITQB NOVA* *A sporulation signature thiol protease that links the mother cell transcriptional cascade to the assembly of the spore surface layers*	
10:00-10:15 AM	**Sandra Olenic** *Michigan State University* *Mechanism of Inhibition of an Intramembrane Metalloprotease Involved in Endosporulation*	
10:15-11:00 AM	**Coffee Break**	*Grand Ballroom Lounge*

Session 3: Cell Biology II *0224 Edward St. John*

Chair: Niels Bradshaw, Brandeis University

11:00-11:30 AM	**David Rudner** *Harvard Medical School*	
11:30-11:45 AM	**Kanika Khanna** *University of California, San Diego* *Asymmetric localization of the divisome during sporulation in* Bacillus subtilis	
11:45-12:00 PM	**Robert Brzozowski** *University of South Florida* *Characterization of the role of a novel growth rate-dependent cell division inhibitor in Gram-positive bacteria*	
12:00-12:15 PM	**Antonella Fioravanti** *VUB-VIB, Brussels* *Characterization and targeting of the* Bacillus anthracis' *S-layer: a new way to fight Anthrax*	
12:15-12:30 PM	**Fangwei Si** *University of California, San Diego* *Mechanistic origin of cell-size control and homeostasis in bacteria*	
12:30-2:00 PM	**Lunch**	*Grand Ballroom*
12:30-2:00 PM	**Career Development Lunch**	*Prince George's Room*

Session 4: Host-Microbe Interactions I *0224 Edward St. John*

Chair: Joe Sorg, Texas A&M University

2:00-2:30 PM	**Michael Otto** *National Institutes of Health*	
2:30-2:45 PM	**Wenqi Yu** *University of South Florida* *Septal secretion of Protein A in* Staphylococcus aureus *requires SecA and lipoteichoic acid synthesis*	
2:45-3:00 PM	**Minsuk Kong** *National Institutes of Health* *Synthetic Bacterial Spores as a Targeted Delivery System for Chemotherapy Drugs*	
3:00-3:15 PM	**Brian Conlon** *UNC-Chapel Hill* *Respiratory burst induces antibiotic tolerance in* Staphylococcus aureus	
3:15-3:30 PM	**Daniela Wetzel** *Emory University* *The impact of the environmental trigger pH on* Clostridioides difficile *physiology*	

3:30-3:45 PM	**Rezia Era Braza** *University of Maryland* *The scfCDE locus: a putative importer necessary for pathophysiology during GAS infections*	
3:45-4:30 PM	**Coffee Break**	*Grand Ballroom Lounge*

Session 5: Biofilms, Cell-Cell Communication, and Secretion I *0224 Edward St. John*
Chair: Catherine Wakeman, Texas Tech University

4:30-5:00 PM	**Marie Elliot** *McMaster University*	
5:00-5:15 PM	**Masaya Fujita** *University of Houston* *An engineered* Bacillus subtilis *strain that expresses reduced levels of the master regulator Spo0A achieves biofilm formation but fails to sporulate*	
5:15-5:30 PM	**Kristi Frank** *Uniformed Services University* *Lysozyme reduces the viability of Enterococcus faecalis in biofilms*	
5:30-5:45 PM	**Niels Bradshaw** *Brandeis University* *Conserved conformational switches control specificity of diverse transcriptional programs*	
5:45-7:15 PM	**Poster Session: Odd poster numbers**	*Grand Ballroom*
7:00-8:30 PM	**Dinner Buffet**	*Grand Ballroom*

Thursday, July 25

Session 6: Biofilms, Cell-Cell Communication, and Secretion II *0224 Edward St. John*
Chair: Amy Gehring, Williams College

8:30-9:00 AM	**Nicola Stanley-Wall** *University of Dundee*	
9:00-9:15 AM	**Stephen Melville** *Virginia Tech* *Type IV pili-dependent secretion of biofilm matrix*	
9:15-9:30 AM	**Leyla Slamti** *INRA Micalis* *CpcR and division of labor in* Bacillus thuringiensis	
9:30-9:45 AM	**Kevin Mlynek** *Georgetown University* *Genetic and biochemical analysis of* Staphylococcus aureus *CodY-mediated biofilms reveals a previously unknown eDNA-polysaccharide matrix*	
9:45-10:00 AM	**Justin Kaspar** *University of Florida* *Inhibition of Streptococcus mutans Cell-to-Cell Signaling by Oral Commensal Streptococci*	
10:00-10:15 AM	**Bruno Dupuy** *Pasteur Institute* *Thriving in an Unfriendly Environment: long-term exposure to bactericidal bile salt induces biofilm formation in* Clostridium difficile	
10:15-11:00 AM	**Coffee Break**	*Grand Ballroom Lounge*

Session 7: Biology of Lateral Gene Transfer and Stress Responses *0224 Edward St. John*
Chair: Melanie Berkmen, Suffolk University

11:00-11:30 AM	**Alan Grossman** *MIT*
11:30-11:45 AM	**Jacques Mahillon** *Université catholique de Louvain* *pXO16, a large conjugative plasmid from Bacillus thuringiensis*
11:45 AM-12:00 PM	**James Martin** *Princeton University* *A dual-mechanism antibiotic targets Gram-negative bacteria and avoids drug resistance*
12:00-12:15 PM	**Heather Feaga** *Columbia University* *Winterizing the Ribosome: Ribosome Hibernation Protects the Small Ribosomal Subunit During Stress*
12:15-12:30 PM	**Rebecca Erickson** *University of Minnesota* *Modulators of conjugation induction in the enterococcal pCF10 system*

12:30-2:00 PM	**Lunch**	*Grand Ballroom*
1:00-2:00 PM	**BioCyc Tutorial** *Ingrid Keseler*	*Prince George's Room*

Session 8: Gene Regulation and Signal Transduction *0224 Edward St. John*
Chair: Prahathees Eswara, University of South Florida

2:00-2:30 PM	**Dan Kearns** *Indiana University*
2:30-2:45 PM	**Sebastian Castillo-Hair** *Rice University* *An Engineered Light-Switchable Two-Component System for Dynamic Interrogation of Cell-Fate Decision Networks in* Bacillus Subtilis
2:45-3:00 PM	**Zhengzhong Zou** *Oregon Health and Science University* *Dissecting the Activation Mechanisms of LytTR Regulatory Systems, a new class of prokaryotic signal transduction system*
3:00-3:15 PM	**Vineetha Zacharia** *UC Berkeley* *AdpA directs the spatiotemporal expression of aerial hyphae and natural product biosynthesis genes in* Streptomyces coelicolor
3:15-3:30 PM	**Soumita Dutta** *University of Texas Health Science Center at Houston* *Branched Chain Amino Acids Affect the Activity of* Bacillus anthracis *Virulence Regulator AtxA in a CodY-independent Manner*
3:30-3:45 PM	**Frances Yap** *Northwestern University* *Hibernating ribosome tells a survival story*

3:45-4:30 PM	**Coffee Break**	*Grand Ballroom Lounge*

Session 9: Chromosome Dynamics *0224 Edward St. John*
Chair: Briana Burton, University of Wisconsin-Madison

4:30-5:00 PM	**Houra Merrikh** *Vanderbilt University*
5:00-5:15 PM	**Nigel Reuel** *Iowa State University* *Controlling Heterogeneity and Increasing Titer from Riboswitch-Regulated* Bacillus subtilis *Spores for Time-Delayed Protein Expression Applications*

5:15-5:30 PM	**Hannah Gaimster** *Newcastle University* *Lethal depletion of an essential cell wall synthesis protein can be rescued by slowing DNA replication in* Bacillus subtilis	
5:30-5:45 PM	**Kevin Lang** *Vanderbilt University* *The impact of DNA supercoiling on replication-transcription conflicts*	
5:45-7:15 PM	**Poster Session: Even poster numbers**	*Grand Ballroom*
7:00-8:30 PM	**Dinner Buffet**	*Grand Ballroom*
7:30-8:30 PM	**Dinner Discussion on Teaching Strategies**	*Prince George's Room*

Friday, July 26

Session 10: Stress Responses *0224 Edward St. John*

Chair: Shonna McBride, Emory University

8:30-9:00 AM	**Angelika Gründling** *Imperial College London*
9:00-9:15 AM	**Christopher Hamm** *Oklahoma State University* Bacillus subtilis *retains characteristic environmental stress responses across diverse stressors*
9:15-9:30 AM	**Elizabeth Fozo** *University of Tennessee, Knoxville* Enterococcus faecalis *goes keto*
9:30-9:45 AM	**Kimberly Harris** *Yale University* *Disruption of the OLE ribonucleoprotein complex causes magnesium toxicity in* Bacillus halodurans
9:45-10:00 AM	**Janani Ravi** *Michigan State University* *Conservation and Modularity in the Pan-bacterial Phage-shock-protein (Psp) Envelope Stress Response System*
10:00-10:15 AM	**Alyssa King** *Georgetown University* *RsaD, a small RNA in* Staphylococcus aureus*, integrates environmental and nutritional stresses*
10:15-11:00 AM	**Coffee Break** *Grand Ballroom Lounge*

Session 11: Nucleotide Signaling *0224 Edward St. John*

Chair: Shaun Brinsmade, Georgetown University

11:00-11:30 AM	**Jorg Stulke** *University of Göttingen*
11:30-11:45 AM	**Aude Trinquier** *CNRS Paris* *tRNA maturation defects lead to inhibition of rRNA processing via synthesis of pppGpp*
11:45 AM-12:00 PM	**Johann Peltier** *Pasteur Institute* *Regulation of osmotic homeostasis by cyclic-di-AMP in* Clostridioides difficile
12:00-12:15 PM	**Kyu Hong Cho** *Indiana State University* *c-di-AMP Regulates Diverse Cellular Pathways Involved in Stress Response, Biofilm Formation, and Virulence in* Streptococcus pyogenes

12:15-12:30 PM **Danny Fung** *University of Wisconsin-Madison*
Spontaneous and triggered antibiotic persistence by (p)ppGpp-GTP antagonism in Bacillus subtilis

12:30-2:00 PM **Lunch** *Grand Ballroom*

Session 12: Host-Microbe Interactions II *0224 Edward St. John*
Chair: Neal Hammer, Michigan State University

2:00-2:30 PM **Hung Ton-That** *UCLA*
2:30-2:45 PM **Natalia Korotkova** *University of Kentucky*
Novel modifications in the cell wall of Streptococcus pyogenes
2:45-3:00 PM **Britney Hardy** *Uniformed Services University*
Human Commensal Mediates Potent Bactericidal Activity Against Methicillin Resistant Staphylococcus aureus
3:00-3:15 PM **Mary Sievers** *National Institutes of Health*
AtxA Binding and Regulation in Bacillus anthracis
3:15-3:30 PM **Jan Maarten van Dijl** *University Medical Center Groningen*
Distinct adaptive responses of Staphylococcus aureus *upon infection of bronchial epithelium during different stages of regeneration*
3:30-3:45 PM **Armand Brown** *The University of Texas Health Science Center at Houston*
Characterization of a Thiroredoxin, DsbA in Enterococcus faecalis*: Roles in antifungal activity and pathogenesis*

3:45-4:15 PM **Coffee Break** *Grand Ballroom Lounge*

Session 13: Metabolism *0224 Edward St. John*
Chair: Matt Cabeen, Oklahoma State University

4:15-4:45 PM **Petra Levin** *Washington University in St. Louis*
4:45-5:00 PM **Emma Denham** *University of Bath*
Sponging the system with RNA – An interaction between two non-coding RNAs allows modulation of central metabolism in response to carbon sources
5:00-5:15 PM **Cordelia Weiss** *University of Maryland*
A dedicated diribonucleotidase resolves a key bottleneck as the terminal step of RNA degradation
5:15-5:30 PM **Arati Ramesh** *NCBS, Bangalore*
Non-coding RNAs control metabolic state in mycobacteria
5:30-5:45 PM **Michael Galperin** *National Institutes of Health*
Genome-based taxonomy of Firmicutes: taming the sea of uncertainty

5:45-6:00 PM **Awards Presentation and Closing Remarks**

7:00-9:30 PM **Banquet** *Grand Ballroom*