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Gordon Research Conferences, Inc.
512 Liberty Lane

West Kingston, RI 02892 -1502

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14. ABSTRACT

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a. REPORT	b. ABSTRACT	c. THIS PAGE			Renee Tsolis
UU	UU	UU	UU		19b. TELEPHONE NUMBER 530-754-9497

RPPR Final Report
as of 04-Jun-2020

Agency Code:

Proposal Number: 74822LSCF **Agreement Number: W911NF-19-1-0166**
INVESTIGATOR(S):

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Organization: **Gordon Research Conferences, Inc.**
Address: 512 Liberty Lane, West Kingston, RI 028921502
Country: USA
DUNS Number: 075712877 EIN: 050300482
Report Date: 29-Nov-2019 Date Received: 10-Apr-2020
Final Report for Period Beginning 30-Apr-2019 and Ending 29-Aug-2019
Title: 2019 Microbial Adhesion and Signal Transduction Gordon Research Conference and Gordon Research Seminar
Begin Performance Period: 30-Apr-2019 **End Performance Period:** 29-Aug-2019
Report Term: 0-Other
Submitted By: Nancy Gray Email: grants@grc.org
Phone: (401) 360-1505

STEM Degrees: 0 **STEM Participants:** 64

Major Goals: The ability of bacteria to attach to and live in close association with surfaces is a critical feature for persistence in particular environments and certain niches within the mammalian host. Specific adhesins or adhesive structures act as specific surface recognition molecules and serve as anchors to overcome surrounding shear forces (e.g. intestinal peristalsis, urine flow). They further define tropism to particular environments and host tissues and are a prerequisite to invasion into epithelial layers and deeper tissues to cause disease. Adherence to surfaces and aggregation allows formation of biofilms that provide protection from chemical, physical and cellular assault. Moreover, adhesin-promoted tight binding to epithelia is important to outcompete microbiota. These characteristics mark them as key microbial virulence factors. The critical role of adhesins for the first step of infection or colonization and accessibility on the bacterial surface makes them a frequent target for antibacterial strategies and potential vaccine candidates. Adhesion also promotes effective communication between individual bacterial cells allowing for community behaviors, and promotes host cell contact-dependent transmission of signals/molecules between the bacteria and its host. This interaction can be mediated by the secretion of small signaling molecules or exotoxins, or by secretion system-mediated injection of effector proteins. Consequently, the topic of signal transduction is intimately linked to adherence and a crucial, tightly regulated process as persistent adherence in an unfavorable environment will be deadly. Thus, bacteria must perceive and transduce signals from their environment to properly regulate adhesion. Adhesion itself also provides a signal about the environment including the presence of neighboring bacteria. The interconnectedness of these topics necessitates their coordinated study to achieve a holistic understanding of bacterial behavior.

Accomplishments: The 2019 Gordon Conference on Microbial Adhesion and Signal Transduction presented cutting-edge research focused on microbial adherence and how microbial interactions drive biological processes through signal transduction cascades. The Conference featured a wide range of topics on microbe-host and microbe-microbe interactions, including signaling networks in bacteria, effects of bacteria on host signaling networks and innate immunity, interactions between microbial virulence factors and host cells, processes driving assembly of both free-living and host-associated microbial communities, and genomic and evolutionary approaches to studying microbes. In addition, new technological advances in areas such as imaging and high-throughput screening will be discussed. The Conference brought together a collection of investigators who are at the forefront of their field, and provided opportunities for junior scientists and graduate students to present their work in poster format and exchange ideas with leaders in the field. Some poster presenters will be selected for short talks. Invited speakers represented researchers using a diversity of approaches to study microbe-host and microbe-microbe interactions including bacterial genetics, biochemistry, structural biology, evolutionary biology, cell biology, infection biology, imaging, ecology, biophysical analysis of cells and surfaces, and bioinformatics and genome biology. This

diversity, coupled with the intimate setting and collegial atmosphere of the GRC, made an ideal venue for interaction between scientists trained in widely different fields and serves to promote interdisciplinary collaborations.

The Gordon Research Seminar on Microbial Adhesion and Signal Transduction was a unique forum for graduate students, post-docs, and other scientists with comparable levels of experience and education to present and exchange new data and cutting edge ideas.

This GRS focused on highlighting new research and methods in microbial interaction and communication within microbial communities in complex environments within the hosts, biofilm structures or abiotic surfaces. Attendees were encouraged to present and discuss unpublished findings among their peers and selected mentors (keynote speakers, discussion leaders, and other senior scientists). This meeting covered cutting-edge topics in bacterial membranes, nanomachines, signaling molecules, resistance, pathogenesis, and include a career session to prepare junior scientists for the following Gordon Research Conference and beyond.

Training Opportunities: Speakers, discussion leaders, poster presenters and attendees simultaneously contributed to and benefited from the collective skills and experience shared throughout the conference. The funding provided by was invaluable to the success of the Conference.

Results Dissemination: Results of the meeting were disseminated via publication by the presenters in scientific journals. Since a guiding principle of the GRCs is the presentation of unpublished results, proceedings are not permitted. In past years, editors from journals including Infection and Immunity, Science, Cell Host & Microbe, and Nature Microbiology have attended this meeting, and have actively encouraged participants to submit their work. Therefore, the structure of the meeting will encourage dissemination of the results via publication.

Honors and Awards: Nothing to Report

Protocol Activity Status:

Technology Transfer: Nothing to Report

GORDON RESEARCH CONFERENCES

FINAL PROGRESS REPORT
Army Research Office
Microbial Adhesion and Signal Transduction GRC/GRS

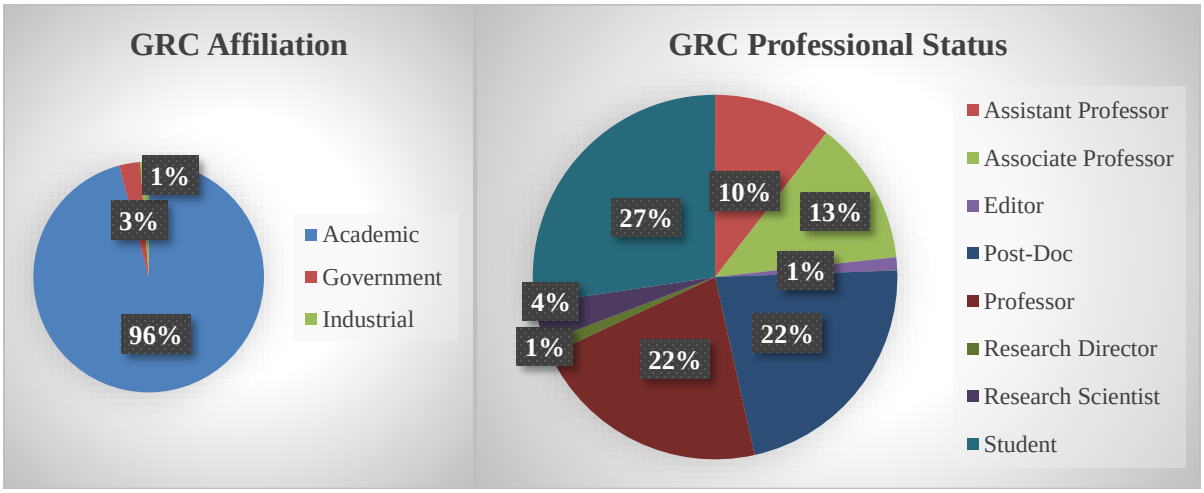
Grant Number W911NF1910166

Operational Summary

The Gordon Research Conference (GRC) and Gordon Research Seminar (GRS) on Microbial Adhesion and Signal Transduction were held at Salve Regina University in Newport, Rhode Island from July 20th-26th, 2019. The meeting covered a variety of scientific topics and the content presented was highly rated by participants.

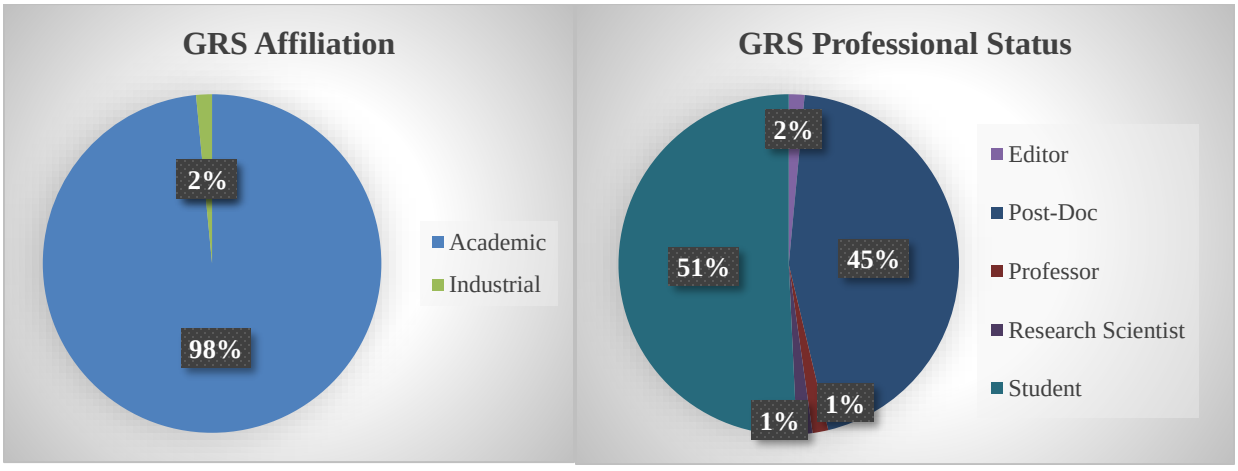
Conference Participants

The Conference was well-attended with 172 participants. Scientists from academia represented 96% of the participants while attendees from government accounted for 3% and those from industry totaled 1%. The meeting also attracted a strong mix of young investigators and senior scientists. Students and post-docs accounted for 49.42% of all attendees. Approximately 51% of the participants at the 2019 meeting were women.



Seminar Participants

The Seminar was well-attended with 67 participants. Scientists from academia represented 98% of the participants and those from industry totaled 2%. Students and post docs combined accounted for 96% of all attendees. Approximately 69% of the participants at the 2019 seminar were women.



Conference Program

The 2019 Gordon Conference on Microbial Adhesion and Signal Transduction presented cutting-edge research focused on microbial adherence and how microbial interactions drive biological processes through signal transduction cascades. The Conference featured a wide range of topics on microbe-host and microbe-microbe interactions, including signaling networks in bacteria, effects of bacteria on host signaling networks and innate immunity, interactions between microbial virulence factors and host cells, processes driving assembly of both free-living and host-associated microbial communities, and genomic and evolutionary approaches to studying microbes. In addition, new technological advances in areas such as imaging and high-throughput screening will be discussed. The Conference brought together a collection of investigators who are at the forefront of their field, and provided opportunities for junior scientists and graduate students to present their work in poster format and exchange ideas with leaders in the field. Some poster presenters will be selected for short talks. Invited speakers represented researchers using a diversity of approaches to study microbe-host and microbe-microbe interactions including bacterial genetics, biochemistry, structural biology, evolutionary biology, cell biology, infection biology, imaging, ecology, biophysical analysis of cells and surfaces, and bioinformatics and genome biology. This diversity, coupled with the intimate setting and collegial atmosphere of the GRC, made an ideal venue for interaction between scientists trained in widely different fields and serves to promote interdisciplinary collaborations.

The Gordon Research Seminar on Microbial Adhesion and Signal Transduction was a unique forum for graduate students, post-docs, and other scientists with comparable levels of experience and education to present and exchange new data and cutting edge ideas.

This GRS focused on highlighting new research and methods in microbial interaction and communication within microbial communities in complex environments within the hosts, biofilm structures or abiotic surfaces. Attendees were encouraged to present and discuss unpublished findings among their peers and selected mentors (keynote speakers, discussion leaders, and other senior scientists). This meeting covered cutting-edge topics in bacterial membranes, nanomachines, signaling molecules, resistance, pathogenesis, and include a career session to prepare junior scientists for the following Gordon Research Conference and beyond.

Conference Budget

Funding provided by the Army Research Office supported partial registration for 5 postdocs, 1 graduate student, 2 professors, 7 associate professors and 1 assistant professor at the GRC and partial registration for 7 post docs and 6 graduate students at the GRS.

Conference Feedback

Participants had an opportunity to provide feedback at the end of the Conference. The feedback collected from the meeting was extremely positive. Evaluations included numerous positive remarks regarding the diverse set of topics, excellent speakers and networking opportunities. Evaluations from the GRS included positive comments regarding networking with other trainees, career development talks and the interactive poster sessions.

GRC would like to thank the Army Research Office for its continued support of the meetings. The contributions received have been critical to the success of the conferences and are having a measurable impact in advancing the frontiers of science worldwide.

Dr. Renee Tsolis, GRC Chair
University of California, Davis

Dr. Petra Dersch, GRC Chair
University of Münster

Dr. Caroline Taouok, GRS Chair
Yale University

Dr. Fabian Rivera Chavez, GRS Chair
Harvard Medical School

Dr. Nancy Ryan Gray
President and Chief Executive Officer
Gordon Research Conferences

Microbial Adhesion and Signal Transduction
Gordon Research Conference
Signaling at the Microbe-Host Interface
July 21 - 26, 2019
Chairs Renee M. Tsolis and Petra Dersch
Vice Chairs Raphael Valdivia and Melanie Blokesch

Conference Program

Sunday	
2:00 pm - 9:00 pm	Arrival and Check-in
6:00 pm - 7:00 pm	Dinner
7:30 pm - 7:40 pm	Introductory Comments by GRC Site Staff / Welcome from the GRC Chair
7:40 pm - 9:30 pm	**New Features of the Bacterial Cell Envelope** Discussion Leader: **Stephen Trent** (University of Georgia, USA)
7:40 pm - 7:50 pm	Opening Remarks
7:50 pm - 8:00 pm	Introduction by Discussion Leader
8:00 pm - 8:20 pm	**Sigal Ben-Yehuda** (The Hebrew University of Jerusalem, Israel) "Bacterial Nanotubes: Conduits for Intra- and Inter-Kingdom Molecular Trafficking"
8:20 pm - 8:30 pm	Discussion
8:30 pm - 8:50 pm	**Andreas Peschel** (University of Tübingen, Germany) "Staphylococci Remodel Surface Glycopolmers to Shift from Commensal to Pathogen Behavior and Evade Immunity"
8:50 pm - 9:00 pm	Discussion
9:00 pm - 9:20 pm	**Nina Salama** (Fred Hutchinson Cancer Research Center, USA) "Phenotypic Adaptations to Life in the Stomach"
9:20 pm - 9:30 pm	Discussion
Monday	
7:30 am - 8:30 am	Breakfast
9:00 am - 12:30 pm	**Bacterial Biofilms and Adhesins** Discussion Leader: **Melanie Blokesch** (Swiss Federal Institute of Technology Lausanne, Switzerland)
9:00 am - 9:10 am	Introduction by Discussion Leader
9:10 am - 9:30 am	**Jean-Marc Ghigo** (Institut Pasteur, France)

	"Adhering Under Pressure: Exploring *Escherichia coli* Biofilm Formation Through Experimental Evolution"
9:30 am - 9:40 am	Discussion
9:40 am - 10:00 am	**Xavier Nassif** (Institut Necker-Enfants Malades, France) "Type IV Pilus Interaction of Meningococci with Microvessels: A Sugar Story"
10:00 am - 10:10 am	Discussion
10:10 am - 10:25 am	**David Adams** (Ecole Polytechnique Fédérale de Lausanne, Switzerland) "DNA-Uptake Pili of *Vibrio cholerae*: One Pilus, Three Fundamental Functions"
10:25 am - 10:30 am	Discussion
10:30 am - 11:00 am	Coffee Break
11:00 am - 11:20 am	**Fitnat Yildiz** (University of California, Santa Cruz, USA) "Mechanisms and Consequences of Biofilm Formation"
11:20 am - 11:30 am	Discussion
11:30 am - 11:45 am	**Cagla Tukel** (Lewis Katz School of Medicine, Temple University, USA) "Bacterial Amyloid Curli: Expression, Immune Recognition and Pathogenicity"
11:45 am - 11:50 am	Discussion
11:50 am - 12:05 pm	**Aaron Whiteley** (Harvard Medical School, USA) "Bacterial cGAS-Like Enzymes at the Host-Pathogen Interface"
12:05 pm - 12:10 pm	Discussion
12:10 pm - 12:30 pm	Poster Previews
12:30 pm - 1:30 pm	Lunch
1:30 pm - 4:00 pm	Free Time
3:00 pm - 4:00 pm	**The GRC Power Hour™** *The GRC Power Hour™ is designed to address challenges women face in science and issues of diversity and inclusion.* *The program supports the professional growth of all members of our communities by providing an open forum for* *discussion and mentoring.* Organizers: **Renee Tsolis** (University of California, Davis, USA) and **Petra Dersch**(University of Münster, Germany)
4:00 pm - 6:00 pm	**Poster Session**
6:00 pm - 7:00 pm	Dinner

7:30 pm - 9:30 pm	**Modulation of Host Signaling by Pathogens** Discussion Leader: **Joanne Engel** (University of California, San Francisco, USA)
7:30 pm - 7:40 pm	Introduction by Discussion Leader
7:40 pm - 8:00 pm	**Pascale Cossart** (Institut Pasteur, France) "Microbiota and Bacterial Infections: The *Listeria* Paradigm"
8:00 pm - 8:10 pm	Discussion
8:10 pm - 8:30 pm	**Christoph Dehio** (Biozentrum, University of Basel, Switzerland) "*Bartonella* Effectors Targeting Innate Immune Signaling"
8:30 pm - 8:40 pm	Discussion
8:40 pm - 9:00 pm	**Jean Celli** (Paul G. Allen School for Global Animal Health, Washington State University, USA) "Modulation of Golgi Functions by *Brucella* Type IV Effectors"
9:00 pm - 9:10 pm	Discussion
9:10 pm - 9:25 pm	**Matthias Machner** (National Institutes of Health, USA) "Large Impact of Small GTPases During *Legionella* Infection"
9:25 pm - 9:30 pm	Discussion

Tuesday

7:30 am - 8:30 am	Breakfast
8:30 am - 9:00 am	Group Photo
9:00 am - 12:30 pm	**Microbial Communities in the Host: Interactions Between Hosts and Their Microbes** Discussion Leader: **Raphael Valdivia** (Duke University, USA)
9:00 am - 9:15 am	Introduction by Discussion Leader
9:15 am - 9:35 am	**Michael Fischbach** (Stanford University, USA) "Small Molecules from the Human Microbiota"
9:35 am - 9:45 am	Discussion
9:45 am - 10:05 am	**Mathias Hornef** (RWTH Aachen University, Germany) "The Host-Microbe Interaction in the Neonate Intestine"
10:05 am - 10:15 am	Discussion
10:15 am - 10:25 am	**Ilana Kolodkin-Gal** (Weizmann Institute of Science, Israel) "Intracellular Calcium Carbonate Drives Biofilm Formation and Persistent Infections"
10:25 am - 10:30 am	Discussion

10:30 am - 11:00 am	Coffee Break
11:00 am - 11:20 am	**Eric Pamer** (Memorial Sloan-Kettering Cancer Center, USA) "Mechanisms of Microbiota-Mediated Suppression of Antibiotic-Resistant Bacterial Pathogens"
11:20 am - 11:30 am	Discussion
11:30 am - 11:50 am	**Bärbel Stecher** (Ludwig Maximilian University of Munich, Germany) "The Microbiota Provides Multiple Insurance Against *Salmonella* Infections"
11:50 am - 12:00 pm	Discussion
12:00 pm - 12:10 pm	**Marteyn Benoit** (Institut Pasteur, France) "Enteropathogen-Mediated Oxygen Depletion Is Essential for Intestinal Mucosa Colonization"
12:10 pm - 12:15 pm	Discussion
12:15 pm - 12:25 pm	**Mariana Byndloss** (Vanderbilt University Medical Center, USA) "Increased Epithelial Oxygenation Links High-Fat Diet to Dysbiosis"
12:25 pm - 12:30 pm	Discussion
12:30 pm - 1:30 pm	Lunch
1:30 pm - 4:00 pm	Free Time
4:00 pm - 6:00 pm	**Poster Session**
6:00 pm - 7:00 pm	Dinner
7:30 pm - 9:30 pm	**Genomic and Evolutionary Approaches to Studying Microbes** Discussion Leader: **Stephen Diggle** (Georgia Institute of Technology, USA)
7:30 pm - 7:45 pm	Introduction by Discussion Leader
7:45 pm - 8:05 pm	**Robert Kingsley** (Quadram Institute Bioscience, United Kingdom) "Population Genetics of *Salmonella typhimurium* Reveals Anthropogenic Selection and Niche Adaptation"
8:05 pm - 8:15 pm	Discussion
8:15 pm - 8:25 pm	**Caroline Taouk** (Yale University, USA) "Exploring Microbiome-Host Interactions at the Single-Cell and Single-Gene Level"
8:25 pm - 8:30 pm	Discussion
8:30 pm - 8:50 pm	**Ruth Massey** (University of Bristol, United Kingdom) "Using Population Genomics to Define the Pathogenicity of Bacterial Pathogens"
8:50 pm - 9:00 pm	Discussion

9:00 pm - 9:10 pm	**Alexandra Koumoutsi** (EMBL Heidelberg, Germany) "Interkingdom Interactions Between *Candida albicans* and *Escherichia coli*"
9:10 pm - 9:15 pm	Discussion
9:15 pm - 9:25 pm	**Lauren Davey** (Duke University, USA) "A Genetic Dissection of Mucin Utilization and Host Colonization by the Beneficial Gut Microbe *Akkermansia* *muciniphila*"
9:25 pm - 9:30 pm	Discussion

Wednesday

7:30 am - 8:30 am	Breakfast
9:00 am - 12:30 pm	**Innate Immunity During Bacterial Infection** Discussion Leader: **Andreas Baumler** (University of California, Davis, USA)
9:00 am - 9:10 am	Introduction by Discussion Leader
9:10 am - 9:30 am	**Igor Brodsky** (University of Pennsylvania, USA) "The Role of Inflammatory and 'Non-Inflammatory' Death Pathways in Control of Bacterial Infection"
9:30 am - 9:40 am	Discussion
9:40 am - 10:00 am	**Max Gutierrez** (The Francis Crick Institute, United Kingdom) "Interactions Between *Mycobacterium tuberculosis* and Macrophages in Time and Space"
10:00 am - 10:10 am	Discussion
10:10 am - 10:20 am	**Bennett Penn** (University of California, Davis, USA) "A *Mycobacterium tuberculosis*-Human Protein-Protein Interaction Map Identifies a Switch Between Host Antiviral and Antibacterial Responses"
10:20 am - 10:25 am	Discussion
10:25 am - 10:55 am	Coffee Break
10:55 am - 11:05 am	**Vladimir Diaz-Ochoa** (University of California, Davis, USA) "NRAMP1 Contributes to Neutrophil Bactericidal Function"
11:05 am - 11:10 am	Discussion
11:10 am - 11:30 am	**Manuela Raffatellu** (University of California, San Diego, USA) "New Insights on the Mucosal Response to *Salmonella*"
11:30 am - 11:40 am	Discussion
11:40 am - 11:50 am	**Denise Monack** (Stanford University, USA)

	"TNF Limits Pathogen-Driven Polarization of Alternatively Activated (M2) Granuloma Macrophages to Restrict *Salmonella* During Persistent Infection"
11:50 am - 11:55 am	Discussion
11:55 am - 12:05 pm	**Francisco Garcia-Del Portillo** (Centro Nacional de Biotecnologia (CNB), CSIC, Spain) "The Peptidoglycan in Intracellular *Salmonella*: Impact on Host Defences"
12:05 pm - 12:10 pm	Discussion
12:10 pm - 12:30 pm	Poster Previews
12:30 pm - 1:30 pm	Lunch
1:30 pm - 4:00 pm	Free Time
4:00 pm - 6:00 pm	**Poster Session**
6:00 pm - 7:00 pm	Dinner
7:00 pm - 7:30 pm	**Business Meeting** *Nominations for the Next Vice Chair; Fill in Conference Evaluation Forms; Discuss Future Site and Scheduling* *Preferences; Election of the Next Vice Chair*
7:30 pm - 9:30 pm	**Secretion Systems and Toxins** Discussion Leader: **Francisco Garcia-Del Portillo** (Centro Nacional de Biotecnologia (CNB), CSIC, Spain)
7:30 pm - 7:35 pm	Introduction by Discussion Leader
7:35 pm - 7:55 pm	**Tracy Palmer** (Newcastle University, United Kingdom) "The *Staphylococcus* Type VII Secretion System and Intra-Species Competition"
7:55 pm - 8:05 pm	Discussion
8:05 pm - 8:25 pm	**Alain Filloux** (Imperial College London, United Kingdom) "The Type VI Secretion System (T6SS): A Bacterial Killing Machine"
8:25 pm - 8:35 pm	Discussion
8:35 pm - 8:55 pm	**Craig Roy** (Yale School of Medicine, USA) "Inhibition of Host Pathogen Sensing Pathways by *Coxiella burnetii*"
8:55 pm - 9:00 pm	Discussion
9:00 pm - 9:10 pm	**Fabian Rivera-Chávez** (Harvard Medical School, USA) "Cholera Toxin Promotes Pathogen Acquisition of Host-Derived Nutrients"
9:10 pm - 9:15 pm	Discussion

9:15 pm - 9:25 pm	**Yael Litvak** (University of California, Davis, USA) "Shiga Toxin-Mediated Pathogen Expansion"
9:25 pm - 9:30 pm	Discussion
Thursday	
7:30 am - 8:30 am	Breakfast
9:00 am - 12:30 pm	**Bacterial Virulence Networks** Discussion Leader: **Ilan Rosenshine** (The Hebrew University of Jerusalem, Israel)
9:00 am - 9:10 am	Introduction by Discussion Leader
9:10 am - 9:30 am	**Carmen Buchrieser** (Institut Pasteur, France) "*Legionella pneumophila*: Regulation of Virulence in the Bacteria and the Host"
9:30 am - 9:40 am	Discussion
9:40 am - 9:50 am	**Daniel Lopez** (Spanish National Research Council (CSIC), Spain) "Proteolytic Regulation of Bacterial Membrane Microdomains Assembly"
9:50 am - 9:55 am	Discussion
9:55 am - 10:15 am	**Cynthia Sharma** (University of Würzburg, Germany) "Regulating with RNA in Pathogenic Epsilonproteobacteria"
10:15 am - 10:25 am	Discussion
10:25 am - 10:55 am	Coffee Break
10:55 am - 11:05 am	**Shantanu Bhatt** (Saint Joseph's University, USA) "Hfq and Hfq-Dependent Small RNAs Control Virulence in the Attaching and Effacing Pathogens, Enteropathogenic *Escherichia coli* and *E. albertii*"
11:05 am - 11:10 am	Discussion
11:10 am - 11:30 am	**Vanessa Sperandio** (University of Texas Southwestern Medical Center, USA) "The Highs and Lows of Enteric Infections"
11:30 am - 11:40 am	Discussion
11:40 am - 11:50 am	**William Sause** (New York University School of Medicine, USA) "The Purine Biosynthesis Regulator PurR Moonlights as a Virulence Regulator in *Staphylococcus aureus*"
11:50 am - 11:55 am	Discussion
11:55 am - 12:05 pm	**John Whitney** (McMaster University, Canada) "An Unexpected Mechanism of Interbacterial Antagonism"

12:05 pm - 12:10 pm	Discussion
12:10 pm - 12:25 pm	**Wai-Leung Ng** (Tufts University School of Medicine, USA) "Cyclic GMP-AMP Signaling Pathway Interactions in *Vibrio cholerae*"
12:25 pm - 12:30 pm	Discussion
12:30 pm - 1:30 pm	Lunch
1:30 pm - 4:00 pm	Free Time
4:00 pm - 6:00 pm	**Poster Session**
6:00 pm - 7:00 pm	Dinner
7:30 pm - 9:30 pm	**New Methodologies for Studying Host-Microbe Interactions** Discussion Leader: **Karen Ottemann** (University of California, Santa Cruz, USA)
7:30 pm - 7:45 pm	Introduction by Discussion Leader
7:45 pm - 8:05 pm	**Knut Drescher** (Max Planck Institute for Terrestrial Microbiology, Germany) "Single-Cell Analysis of Biofilms Reveals Cellular Interactions and Community Functions"
8:05 pm - 8:15 pm	Discussion
8:15 pm - 8:35 pm	**Grant Jensen** (California Institute of Technology, USA) "Structure and Function of Bacterial Secretion Systems by Electron Cryotomography of Intact Cells"
8:35 pm - 8:45 pm	Discussion
8:45 pm - 9:05 pm	**Dennis Ko** (Duke University, USA) "The Hi-HOST Phenome Project: An Atlas of Human Genetic Variation Affecting Host-Microbe Interactions"
9:05 pm - 9:15 pm	Discussion
9:15 pm - 9:30 pm	Closing Remarks
Friday	
7:30 am - 8:30 am	Breakfast
9:00 am	Departure

Contributors

Gordon Research Conferences
Frontiers of Science

Carl Storm Underrepresented Minority Fellowship Program

Carl Storm
International
Diversity
Fellowship Program

Microbial Adhesion and Signal Transduction

Gordon Research Seminar

Microbial Interactions, Communities and Pathogenesis in the Host and Natural Environments

July 20 - 21, 2019

Chairs Caroline S. Taouk and Fabian Rivera-Chávez

Conference Program

Saturday

2:00 pm - 5:00 pm	Arrival and Check-in
3:30 pm - 3:45 pm	Introductory Comments by GRC Site Staff / Welcome from the GRS Chair
3:45 pm - 4:30 pm	**Microbial Interactions Within Communities** Discussion Leader: **Matthew Jemielita** (Princeton University, USA)
3:45 pm - 4:00 pm	**Michael Patnode** (Washington University in St. Louis, USA) "Interspecies Competition Underlies the Selective Effects of Dietary Fibers on Members of a Human Gut Microbiota"
4:00 pm - 4:05 pm	Discussion
4:05 pm - 4:20 pm	**Rita Oliveira** (Instituto Gulbenkian de Ciência, Fundação Gulbenkian Ciência, Portugal) "Gut Microbiota Transmission Prevents Antibiotic-Induced Stochastic Loss of Colonization Resistance"
4:20 pm - 4:25 pm	Discussion
4:25 pm - 4:30 pm	General Discussion
4:30 pm - 6:00 pm	**Poster Session**
6:00 pm - 7:00 pm	Dinner
7:30 pm - 9:30 pm	**Molecular Nanomachines and Signaling Molecules / Keynote Session: Nutritional Immunity in the Inflamed Gut** Discussion Leader: **Bentley Lim** (Yale University, USA)
7:30 pm - 7:45 pm	**Markus Furter** (ETH Zürich, Switzerland) "Mucus Architecture and Near-Surface Swimming Affect Distinct *Salmonella* Typhimurium Infection Patterns Along the Murine Intestinal Tract"
7:45 pm - 7:50 pm	Discussion
7:50 pm - 8:05 pm	**Cristina Giogha** (Hudson Institute of Medical Research, Australia) "Novel Bacterial Glycosyltransferases that Target Host Immune Signaling Proteins"
8:05 pm - 8:10 pm	Discussion
8:10 pm - 8:25 pm	**Kristine Trotta** (University of California, San Francisco, USA)

	"Genetic Determinants of *E. coli* Susceptibility to a Cell Wall-Degrading Toxin"
8:25 pm - 8:30 pm	Discussion
8:30 pm - 8:45 pm	**David Adams** (Ecole Polytechnique Fédérale de Lausanne, Switzerland) "DNA-Uptake Pili of *Vibrio cholerae*: One Pilus, Three Fundamental Functions"
8:45 pm - 8:50 pm	Discussion
8:50 pm - 9:20 pm	**Manuela Raffatellu** (University of California, San Diego, USA) "Nutritional Immunity in the Inflamed Gut"
9:20 pm - 9:30 pm	Discussion

Sunday

7:30 am - 8:30 am	Breakfast
9:00 am - 11:00 am	**Microbial Pathogenesis and Interactions with the Host** Discussion Leader: **William Sause** (New York University School of Medicine, USA)
9:00 am - 9:15 am	**Kristen Davis** (Sackler School of Graduate Biomedical Sciences, Tufts University, USA) "Host CD59 Potentiates the Function of the *Yersinia* Type III Secretion System"
9:15 am - 9:20 am	Discussion
9:20 am - 9:35 am	**Aaron Whiteley** (Harvard Medical School, USA) "Bacterial cGAS-Like Enzymes at the Host-Pathogen Interface"
9:35 am - 9:40 am	Discussion
9:40 am - 9:55 am	**Vladimir Diaz-Ochoa** (University of California, Davis, USA) "NRAMP1 Is Critical for Neutrophil-Mediated Control of Intracellular Pathogens"
9:55 am - 10:00 am	Discussion
10:00 am - 10:15 am	**Lisa Hennemann** (McGill University, Canada) "Does Pathoadapted *Pseudomonas aeruginosa* Promote an Intracellular Reservoir Within Airway Epithelial Cells?"
10:15 am - 10:20 am	Discussion
10:20 am - 10:35 am	**Daniel Greenwood** (The Francis Crick Institute, United Kingdom) "Visualizing the Subcellular Localization of Antibiotics Against Tuberculosis"
10:35 am - 10:40 am	Discussion
10:40 am - 10:55 am	**Blanca Rodriguez** (Duke University, USA) "Bacterial Membrane Vesicle-Associated Nucleic Acids Induce Interferon-β Expression in Murine Macrophages"
10:55 am - 11:00 am	Discussion

11:00 am - 12:30 pm	**Poster Session** *Coffee will be served in the poster area from 11:00 am - 11:30 am*
12:30 pm - 1:30 pm	Lunch
1:30 pm - 2:30 pm	**Mentorship Component: Career Paths in Science** Discussion Leader: **Florence Caro** (Harvard Medical School, USA)
1:30 pm - 1:35 pm	Introduction by Discussion Leader
1:35 pm - 1:50 pm	**Sina Mohammadi** (Merck Exploratory Science Center, USA) "Industrial Science: Training and Working in Big Pharma"
1:50 pm - 1:55 pm	Discussion
1:55 pm - 2:10 pm	**Michael Chao** (Nature Microbiology, USA) "Careers in Scientific Publishing"
2:10 pm - 2:15 pm	Discussion
2:15 pm - 2:25 pm	General Discussion
2:25 pm - 2:30 pm	Closing Remarks
2:30 pm - 3:00 pm	**Evaluation Period** *Fill in GRS Evaluation Forms*
3:00 pm	Seminar Concludes

Contributors

NIH National Institutes of Health

NEW ENGLAND BioLabs Inc.

HIRI HELMHOLTZ Institute for RNA-based Infection Research

Harvard Medical School - Department of Microbiology

Microbial Adhesion and Signal Transduction GRC Registration List

Name	Organization	Participation
Adams, David W	Ecole Polytechnique Fédérale de Lausanne	Speaker
Arnold, Will	Addgene	Attendee
Baker, EmilyClare P	University of Oregon	Poster Presenter
Baumler, Andreas J	University of California, Davis	Discussion Leader
Ben-Yehuda, Sigal	The Hebrew University of Jerusalem	Speaker
Benoit, Marteyn S	Institut Pasteur	Speaker
Benziger, Peter Todd	Molecular Genetics and Microbiology Department at Stony Brook University	Poster Presenter
Bhatt, Shantanu	Saint Joseph's University	Speaker
Blokesch, Melanie	Swiss Federal Institute of Technology Lausanne	Vice Chair
Briken, Volker	University of Maryland	Attendee
Brodsky, Igor E	University of Pennsylvania	Speaker
Brown, Morgan M	University of Colorado Anschutz Medical Campus	Poster Presenter
Buchrieser, Carmen	Institut Pasteur	Speaker
Bunduc, Catalin M	Vrije Universiteit Amsterdam	Poster Presenter
Byndloss, Mariana X	Vanderbilt University Medical Center	Speaker
Camberg, Jodi L	University of Rhode Island	Poster Presenter
Cao, Tianyuan	The University of Notre Dame	Poster Presenter
Carfrae, Lindsey A	McMaster University	Poster Presenter
Caro, Florence	Harvard Medical School	Poster Presenter
Celli, Jean	Paul G. Allen School for Global Animal Health, Washington State University	Speaker
Chakraborty, Subhashish	IISc	Poster Presenter
Chao, Michael	Nature Microbiology	Attendee
Chen, Swaine L	National University of Singapore and Genome Institute of Singapore	Poster Presenter
Cian, Melina B.	University of Oklahoma Health Science Center.	Poster Presenter
Clay, Michelle	Dartmouth College	Poster Presenter
Cook, Laura C	Binghamton University - SUNY	Poster Presenter
Corbett, Kevin D	UC San Diego	Poster Presenter
Cossart, Pascale	Institut Pasteur	Speaker
Cover, Timothy L	Vanderbilt University School of Medicine	Poster Presenter
Dahl, Jan-Ulrik	Illinois State University	Poster Presenter
Davey, Lauren	Duke University	Speaker
Davis, Kristen J	Sackler School of Graduate Biomedical Sciences, Tufts University	Poster Presenter
Dehio, Christoph	Biozentrum, University of Basel	Speaker
Deng, Liwen	University of Colorado Anschutz Medical Campus	Poster Presenter
Dersch, Petra	University of Münster	Chair
Di Venanzio, Gisela A	Washington University St Louis, School of Medicine	Poster Presenter
Diaz-Ochoa, Vladimir E	University of California, Davis	Speaker
Dickey, Seth W	National Institute of Allergy and Infectious Diseases	Poster Presenter
Diggle, Stephen	Georgia Institute of Technology	Discussion Leader
Dooyema, Sam	Vanderbilt University	Poster Presenter
Dorgan, Ben	Kings College London	Poster Presenter
Douglass, Martin V	University of Georgia Athens	Poster Presenter
Drescher, Knut	Max Planck Institute for Terrestrial Microbiology	Speaker
Ellermann, Melissa	UT Southwestern Medical Center	Poster Presenter

Engel, Joanne N	University of California, San Francisco	Discussion Leader
Esteban López, María	Max Planck Institute for Terrestrial Microbiology	Poster Presenter
Filloux, Alain A	Imperial College London	Speaker
Fischbach, Michael	Stanford University	Speaker
Furter, Markus	ETH Zürich	Poster Presenter
Garcia-Del Portillo, F	Centro Nacional de Biotecnologia (CNB), CSIC	Speaker
Geiger, Sarah	National University of Singapore, School of Medicine	Poster Presenter
Ghigo, Jean-Marc	Institut Pasteur	Speaker
Giogha, Cristina	Hudson Institute of Medical Research	Poster Presenter
Goncalves da Silva, R	The University of Nottingham	Poster Presenter
Grabowicz, Marcin	Emory University	Poster Presenter
Greenwood, Daniel J	The Francis Crick Institute	Poster Presenter
Gutierrez, Max	The Francis Crick Institute	Speaker
Hadjifrangiskou, Maria	Vanderbilt University Medical Center	Poster Presenter
Han, Seung Hyun	Seoul National University School of Dentistry	Poster Presenter
Hennemann, Lisa C	McGill University	Poster Presenter
Hockenberry, Alyson M	ETH Zürich	Poster Presenter
Hornef, Mathias W	RWTH Aachen University	Speaker
Isom, Georgia L	NYU Langone Medical Center	Poster Presenter
Jaswal, Kanchan	Indian Institute of Science Education and Research, Mohali	Poster Presenter
Jemielita, Matthew	Princeton University	Poster Presenter
Jensen, Grant	California Institute of Technology	Speaker
Khetrapal, Varnica	National University of Singapore	Poster Presenter
Kim, Soo-Kyoung	University of Maryland	Poster Presenter
Kim, GyuLee	Rutgers University	Poster Presenter
Kim, Sinyang	POESTECH	Poster Presenter
Kim, Seongmi	Washington University in St Louis	Poster Presenter
Kingsley, Robert	Quadram Institute Bioscience	Speaker
Kitao-Ando, Tomoe	Gifu Univerity	Poster Presenter
Ko, Dennis C.	Duke University	Speaker
Kolodkin-Gal, Ilana	Weizmann Institute of Science	Speaker
Konovalova, Anna	University of Texas Health Science Center at Houston	Poster Presenter
Korotkov, Konstantin V	University of Kentucky	Poster Presenter
Koumoutsi, Alexandra	EMBL Heidelberg	Speaker
Kovalyova, Yekaterina	Yale University	Poster Presenter
Kurushima, Jun	University of Lausanne	Poster Presenter
Kwiecinski, Jakub	University of Colorado Anschutz Medical Campus	Poster Presenter
Lee, Jung-Eun	Springer Nature	Attendee
Lee, Minhee	POSTECH	Poster Presenter
Lee, Vincent T	University of Maryland, College Park	Attendee
Leong, John M	Tufts University School of Medicine	Attendee
Levy, Haim	Israel Institute for Biological Research	Attendee
Lim, Bentley	Yale University	Poster Presenter
Limoli, Dominique H	University of Iowa Carever College of Medicine	Poster Presenter
Lin, Hsiao-Han	Academia Sinica	Poster Presenter
Little, Dustin J	McMaster Univeristy	Poster Presenter
Litvak, Yael	University of California, Davis	Speaker
Lonergan, Zachery	Vanderbilt University	Poster Presenter

Lopez, Daniel	Spanish National Research Council (CSIC)	Speaker
Lopez, Alberto E	Northwestern University	Attendee
Machner, Matthias P	National Institutes of Health	Speaker
MacNair, Craig R	McMaster University	Poster Presenter
Massey, Ruth C	University of Bristol	Speaker
McMillan, Hannah M	Duke University	Poster Presenter
McPhee, Joseph B	Ryerson University	Poster Presenter
Merz, Alexey J	University of Washington	Poster Presenter
Mike, Laura A	University of Michigan	Poster Presenter
Miller, Brittany	University of California, Davis	Poster Presenter
Mitosch, Karin	EMBL Heidelberg	Poster Presenter
Monack, Denise M	Stanford University	Speaker
Mukherjee, Sampriti	Princeton University	Poster Presenter
Nasreen, Marufa	university of queensland	Poster Presenter
Nassif, Xavier S	Institut Necker-Enfants Malades	Speaker
Ng, Wai-Leung	Tufts University School of Medicine	Speaker
Nunez, Natalia	Infectious Disease Models and Innovative Therapies	Poster Presenter
Oliveira, Rita Almeida	Instituto Gulbenkian de Ciência, Fundação Gulbenkian Ciência	Poster Presenter
Ottemann, Karen M	University of California, Santa Cruz	Discussion Leader
Palmer, Tracy	Newcastle University	Speaker
Pamer, Eric	Memorial Sloan-Kettering Cancer Center	Speaker
Parihar, Suraj P	Wellcome Centre for Infectious Diseases Research in Africa	Poster Presenter
Parraga Solorzano, Paola	University of Illinois at Urbana Champaign	Poster Presenter
Patnode, Michael L	Washington University in St. Louis	Poster Presenter
Peek, Rick	Vanderbilt University Medical Center	Attendee
Penn, Bennett	University of California, Davis	Speaker
Peschel, Andreas	University of Tübingen	Speaker
Pi, Hualiang	Vanderbilt University Medical Center	Poster Presenter
Pimenta, Andreia I.	Institute for Biotechnology and Bioengineering, Instituto Superior Técnico, Universidade de Lisboa	Poster Presenter
Pishchany, Gleb	Harvard Medical School	Poster Presenter
Portlock, Theo J	School of Biological and Chemical Sciences	Poster Presenter
Powers, Matthew	University of Georgia	Poster Presenter
Queval, Christophe J	The Francis Crick Institute	Poster Presenter
Raffatellu, Manuela	University of California, San Diego	Speaker
Ramstrom, Olof	University of Massachusetts Lowell	Attendee
Ray, Virginia A	UT Southwestern Medical Center	Poster Presenter
Reichhardt, Courtney	University of Washington	Poster Presenter
Rivera-Chávez, Fabian	Harvard Medical School	Speaker
Rodriguez, Blanca V	Duke University	Poster Presenter
Rosenshine, Ilan	The Hebrew University of Jerusalem	Discussion Leader
Rosenzweig, Rachel	University of California, Irvine	Poster Presenter
Roujeinikova, Anna	Monash University	Poster Presenter
Roy, Craig R	Yale School of Medicine	Speaker
Rucks, Elizabeth A	University of Nebraska Medical Center	Attendee
Salama, Nina R	Fred Hutchinson Cancer Research Center	Speaker
Sanfilippo, Joseph	Princeton University	Poster Presenter
Sause, William E	New York University School of Medicine	Speaker

Schaefers, Matthew M	Boston Children's Hospital	Poster Presenter
Schuckert, Amanda E	Texas A&M University	Poster Presenter
Seifert, Hank S	Northwestern University	Attendee
Shames, Stephanie R	Kansas State University	Poster Presenter
Sharba, Sinan	University of Gothenburg	Poster Presenter
Shaw, McKay	Caribou Biosciences	Poster Presenter
Slater, Sabrina L	CMBI, Imperial College London	Poster Presenter
Spencer, Brady L	University of Colorado-Anschutz Medical Campus	Poster Presenter
Sperandio, Vanessa	University of Texas Southwestern Medical Center	Speaker
Stanisich, Jessica	ETH Zurich	Poster Presenter
Stecher, Bärbel	Ludwig Maximilian University of Munich	Speaker
Stolle, Anne-Sophie	Harvard Medical School	Poster Presenter
Sun, Wei	Albany Medical College	Poster Presenter
Tan, Shumin	Tufts University School of Medicine	Poster Presenter
Taouk, Caroline S	Yale University	Speaker
Tidhar, Avital	Israel Institute for Biological Research	Poster Presenter
Trent, Stephen	University of Georgia	Discussion Leader
Trotta, Kristine L	University of California, San Francisco	Poster Presenter
Tsai, Jun Yuh	UC Davis	Poster Presenter
Tsolis, Renee M	University of California, Davis	Chair
Tukel, Cagla	Lewis Katz School of Medicine, Temple University	Speaker
Valdivia, Raphael	Duke University	Vice Chair
Visick, Karen L	Loyola University Chicago	Attendee
Wan, Fengyi	Johns Hopkins University	Poster Presenter
Wang, Huizhi	Virginia Commonwealth University	Poster Presenter
Whiteley, Aaron T.	Harvard Medical School	Speaker
Whitney, John	McMaster University	Speaker
Wunschel, Eva J	Hannover Medical School	Poster Presenter
Xia, Xue	Johns Hopkins Bloomberg School of Public Health	Poster Presenter
Yan, Mingdi	Univeristy of Massachussetts Lowell	Poster Presenter
Yildiz, Fitnat H	University of California, Santa Cruz	Speaker
Zhang, Dapeng	Saint Louis University	Attendee
Zyla, Dawid S	ETH Zurich	Poster Presenter

172 Attendees

Microbial Adhesion and Signal Transduction GRS Registration List

Name	Organization	Participation
Adams, David W	Ecole Polytechnique Fédérale de Lausanne	Speaker
Baker, EmilyClare P	University of Oregon	Poster Presenter
Benziger, Peter Todd	Molecular Genetics and Microbiology department at Stony Brook University	Poster Presenter
Brown, Morgan M	University of Colorado Anschutz Medical Campus	Poster Presenter
Bunduc, Catalin M	Vrije Universiteit Amsterdam	Poster Presenter
Cao, Tianyuan	The University of Notre Dame	Poster Presenter
Caro, Florence	Harvard Medical School	Discussion Leader
Chao, Michael	Nature Microbiology	Speaker
Cian, Melina B.	University of Oklahoma Health Science Center.	Poster Presenter
Clay, Michelle	Dartmouth College	Poster Presenter
Davey, Lauren	Duke University	Poster Presenter
Davis, Kristen J	Sackler School of Graduate Biomedical Sciences, Tufts University	Speaker
Deng, Liwen	University of Colorado Anschutz Medical Campus	Poster Presenter
Di Venanzio, Gisela A	Washington University St Louis, School of Medicine	Poster Presenter
Diaz-Ochoa, Vladimir E	University of California, Davis	Speaker
Dooyema, Sam	Vanderbilt University	Poster Presenter
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Kim, Seongmi	Washington University in St Louis	Poster Presenter
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Reichhardt, Courtney	University of Washington	Poster Presenter
Rivera-Chávez, Fabian	Harvard Medical School	Chair
Rodriguez, Blanca V	Duke University	Speaker
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Schuckert, Amanda E	Texas A&M University	Poster Presenter
Slater, Sabrina L	CMBI, Imperial College London	Poster Presenter
Spencer, Brady L	University of Colorado-Anschutz Medical Campus	Poster Presenter
Stanisich, Jessica	ETH Zurich	Poster Presenter
Stolle, Anne-Sophie	Harvard Medical School	Poster Presenter
Taouk, Caroline S	Yale University	Chair
Trotta, Kristine L	University of California, San Francisco	Speaker
Tsai, Jun Yuh	UC Davis	Poster Presenter
Turo, Alexander J	The Ohio State University	Poster Presenter
Whiteley, Aaron T.	Harvard Medical School	Speaker
Zyla, Dawid S	ETH Zurich	Poster Presenter

67 Attendees