Program (Final)
2015 Molecular Basis of Infectious Diseases (MBID) Retreat
Friday, March 20, 2015
UTHealth (University of Texas Health Science Center at Houston)
Brown Foundation Institute of Molecular Medicine (IMM)
1825 Pressler Street, Houston, TX 77030
Website: https://med.uth.edu/pathology/courses/mbid/mbid-retreat/2014-mbid-retreat/

Sponsored by:
The Molecular Basis of Infectious Diseases Training Program (https://med.uth.edu/pathology/courses/mbid/)
Center of Emerging and Re-Emerging Infections, UTHealth

Co-Organizers:
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OVERVIEW

8:00-10:00  Registration and coffee – James T. Willerson (JTW) Discovery Hall
(Note: No food or drinks are allowed in the IMM Auditorium)

9:00-9:45  Optional Workshop on Career Development in Microbiology/Infectious Diseases – IMM Auditorium

9:45-10:00  Break

10:00-11:00  Keynote Speaker: Laurie E. Comstock, Ph.D., Associate Microbiologist, Brigham & Women’s Hospital, and Associate Professor of Medicine, Harvard Medical School, Boston, MA “Ecological analyses of the intestinal microbiota”- IMM Auditorium

11:00-11:45  Presentations by postdoctoral fellows and students: – IMM Auditorium

11:45-12:15  Buck S. Samuel, Ph.D., Assistant Professor of Molecular Virology and Microbiology, Baylor College of Medicine, Houston, TX “Cultivating a healthy dialogue: influence of the natural microbiome on C. elegans growth” - IMM Auditorium

12:15-2:30  Poster session and lunch

2:45-3:30  Presentations by research faculty, postdoctoral fellows and students: – IMM Auditorium

3:30-4:30  Keynote Speaker: Peter J. Hotez, M.D., Ph.D., Professor and Founding Dean, National School of Tropical Medicine, Baylor College of Medicine, Houston, TX “The neglected tropical diseases (NTD) vaccines: vaccinating against poverty & conflict in Middle East and North Africa”- IMM Auditorium

4:30  Poster award presentations and adjournment
**DETAILED SCHEDULE**

8:00-10:00  Registration and coffee – JTW Discovery Hall
(Note: No food or drinks are allowed in the IMM Auditorium)

9:00-9:45  Optional Workshop on Career Development in Microbiology/Infectious Diseases – IMM Auditorium

9:45-10:00  Break

**10:00-12:15  Morning Session – IMM Auditorium**

*Moderator: Robert A. Britton, Ph.D., Professor, Therapeutic Microbiology Laboratory, Dept. of Molecular Virology and Microbiology, Alkek Center for Metagenomics and Microbiome Research, Baylor College of Medicine, Houston, TX*

10:00-11:00  Keynote Speaker: **Laurie E. Comstock, Ph.D.**, Associate Microbiologist, Brigham & Women’s Hospital, and Associate Professor of Medicine, Harvard Medical School, Boston, MA “*Ecological analyses of the intestinal microbiota*”

11:00-11:15  **Justin Clark**, Graduate Student, Dept. of Molecular Virology and Microbiology, Baylor College of Medicine, Houston, TX “*Redirecting heme degradation in Escherichia coli for the purpose of monitoring heme uptake and biosynthesis*”

11:15-11:30  **Heather A. Danhof**, Graduate Student, Dept. of Microbiology & Molecular Genetics, UTHealth Medical School, Houston, TX. “*The environmental alkalinization response of Candida albicans is promoted by Ato proteins*”

11:30-11:45  **Vlatko Stojanoski**, Graduate Student, Dept. of Pharmacology, Baylor College of Medicine. “*Crystal structure of OXA-163 reveals an expanded active site to accommodate the oxyiminocephalosporin Ceftazidime*”

11:45-12:15  **Buck S. Samuel, Ph.D.**, Assistant Professor of Molecular Virology and Microbiology, Baylor College of Medicine, Houston, TX “*Cultivating a healthy dialogue: influence of the natural microbiome on C. elegans growth*”

**12:15-2:30  Poster session and lunch – JTW Discovery Hall**
(Presenters are in bold. A key of abbreviations is provided on the last page.)

1. **Benu Atri**, Panagiotis Katsonis, Anbu K. Adikesavan, Olivier Lichtarge. Structural and Computational Biology and Molecular Biophysics, BCM. *Functional effects of amino acid substitution in E. coli RecA*.


4. Justin Clark, Christopher Nobles, Sabrina Green, and Anthony Maresso. MVM, BCM. *Redirecting heme degradation in Escherichia coli for the purpose of monitoring heme uptake and biosynthesis.*


10. Yi Liu, Stephane Gourguechon, and Ziyin Li. MMG, UTHHealth. *Coupling of translation initiation and G1/S cell cycle transition in the early branching microbial eukaryote Trypanosoma brucei.*


17. **Austen Terwilliger,** Michelle Swick, Kathryn Pflughoft, Julie Lovchik, C. Rick Lyons, Theresa Koehler, and Anthony Maresso. MVM, BCM, MMG, UTHealth. *Bacillus anthracis* employs a secreted protease to utilize serum proteins as an amino acid source.

18. **Surabhi Tyagi,** Diane Edmondson, and Steven Norris. DPALM, UTHealth. Improved understanding of the mechanism of *vlsE* antigenic variation through next-generation sequencing.


21. **Bijay Khajanchi,** Evelyn Odeh, Lihui Gao, Mary Jacobs, Mario Philipp, Tao Lin, and Steven Norris. DPALM, UTHealth. Phosphoenolpyruvate phosphotransferase system components modulate gene transcription and virulence of *Borrelia burgdorferi*.

22. **Arshad Khan,** Lovepreet Mann, Ramesh Pappana, Christopher Singh, Scott Olson, Robert Hunter, Gobardhan Das, Daniel Surbek, and Chinnaswamy Jagannath. DPALM, UTHealth. Induction of autophagy in mesenchymal stem cells enhances uptake and intracellular killing of *Mycobacterium tuberculosis*.

23. **Rhonald C. Lua,** David C. Marciano, Christophe Herman, and Olivier Lichtarge. MHG, BCM. Cooperativity of negative feedback auto-regulation confers increased mutational robustness in gene expression.

24. **Li Ma,** Yongjun Gao, and Anthony Maresso. MVM, BCM. Interaction between iron chelation and antibiotics drives free radical-based killing of bacteria.


27. **Preeti Sule,** Yunfeng Cheng, Hany Hossounah, Aneesa Noormohammed, Ying Kong, Suprateek Kundu, Edward A. Graviss, Jiaghong Rao, and Jeffrey D. Cirillo. 1 Microbial Pathogenesis and Immunology, TAMHSC, 2 Molecular Imaging Program, Radiology and Chemistry, Stanford. 3 Microbiology, Immunology and Biochemistry, UTHSC. 4 Biostatistics & Bioinformatics, Emory University. 5 The Center for Molecular and Translational Human Infectious Diseases Research, TMHRI. Development of a new point of care diagnostic for tuberculosis.

29. Michelle C. Swick and Theresa M. Koehler. MMG, UTHealth. **Maturation and activity of the *Bacillus anthracis* secreted protease InhA1.**

30. Luz Vela, Xi-Lei Zeng, Mary Estes, and Anthony Maresso. MVM, BCM. **Three-dimensional enteroids as novel systems for the study of enteric infections.**

31. Yanyu Wang, Sarah A. Jenkins, Chunfang Gu, Ankita Shree, Margie Moczygemba, Jennifer Herold, Marina Botto, Rick Wetsel, and Yi Xu. CIID, IBT, TAMHSC. **Bacillus anthracis spore surface protein BclA mediates binding to complement factor H, suppresses adaptive immune responses and contributes to persistent infections.**

32. Puja Yadav and Nayun Kim. MMG, University of Texas. **Mechanism of Topoisomerase-mediated suppression of G4-associated genome instability during high transcription.**

33. Sabrina I. Green, Nadim J. Ajami, Nina M. Poole, Roger E. Price, Joseph F. Petrosino and Anthony W. Maresso. MVM, BCM. **A novel model of chemotherapy-induced systemic *E. coli* infection reveals a role for SsIE in bacterial translocation.**

34. Joseph M. Hyser¹, Thieng T. Pham³, Budi Utama¹, Sue E. Crawford¹, Nina K. Ramachandran¹, Alicia Strtak¹⁴, Alexandra Chang-Graham¹, Khalil Ettayebi³, Doug Peters¹⁴, Frank T. Horrigan², Anne H. Delcour³, and Mary K. Estes¹. ¹MVM, ²Molecular Physiology & Biophysics, BCM. ³Biology & Biochemistry, UH. ⁴Augustana College, Rock Island, IL. **Calcium signaling pathways that cause rotavirus diarrhea.**

35. Tao Lin, Lihui Gao, Xiaowei Zhaoa, Jun Liu, and Steven J. Norris. DPALM, UTHealth. **Mutations in the *Borrelia burgdorferi* flagellar type III secretion system genes fliH and fliI profoundly affect spirochete flagellar assembly, morphology, motility, structure, cell division, and mouse infectivity.**

2:45-4:30  Afternoon Session – IMM Auditorium
Moderator: Hung Ton-That, Ph.D., Professor, Dept. of Microbiology & Molecular Genetics, UTHealth Medical School, Houston, TX

2:45-3:00  Nicola Horstmann, Ph.D. Research Scientist, Dept. of Infectious Diseases, UT MD Anderson Cancer Center. “Characterization of the effect of Histidine kinase CovS on response regulator phosphorylation in Group A Streptococcus”

3:00-3:15  Malik Raynor, Graduate Student, Dept. of Microbiology and Molecular Genetics, UTHealth Medical School. “Target specificity and protein interactions of Bacillus anthracis PRD-containing virulence regulators”

3:15-3:30  Preeti Sule, Postdoctoral Fellow, Dept. of Microbial Pathogenesis and Immunology, Texas A&M Health Science Center, College Station, TX. “Development of a new point of care diagnostic for tuberculosis”

3:30-4:30  Keynote Speaker: Peter J. Hotez, M.D., Ph.D., Professor and Founding Dean, National School of Tropical Medicine, Baylor College of Medicine, Houston, TX “The neglected tropical diseases (NTD) vaccines: vaccinating against poverty & conflict in Middle East and North Africa”

4:30  Poster award presentations and adjournment

Abbreviations

BCM = Baylor College of Medicine
CIID = Center for Infectious and Inflammatory Diseases
DPALM = Dept. of Pathology and Laboratory Medicine
IBT = Institute of Biosciences and Technology
IM = Internal Medicine
IMM = Institute of Molecular Medicine
MMG = Dept. of Microbiology and Molecular Genetics
MMP = Dept. of Microbial and Molecular Pathogenesis
MI = Dept. of Microbiology and Immunology
MVM = Dept. of Molecular Virology and Microbiology
TAMHSC = Texas A&M Health Science Center
TMHRI = The Methodist Hospital Research Institute
UTH = Univ. of Texas Health Science Center at Houston
UTHSCSA = Univ. of Texas Health Science Center at San Antonio
UTMDACC = UT MD Anderson Cancer Center
UTMB = Univ. of Texas Medical Branch (Galveston)
UH = Univ. of Houston
MHG = Molecular & Human Genetics

Attendee list available upon request: Lindsay.A.Thorpe@uth.tmc.edu