NIH CENTERS OF BIOMEDICAL RESEARCH EXCELLENCE

Oklahoma Center for Respiratory and Infectious Diseases

APRIL 4, 2024

8A.M.-6P.M.

11TH ANNUAL RESEARCH SYMPOSIUM

Meditations Event Center
1205 N. Country Club Rd.
Stillwater, OK, 74075

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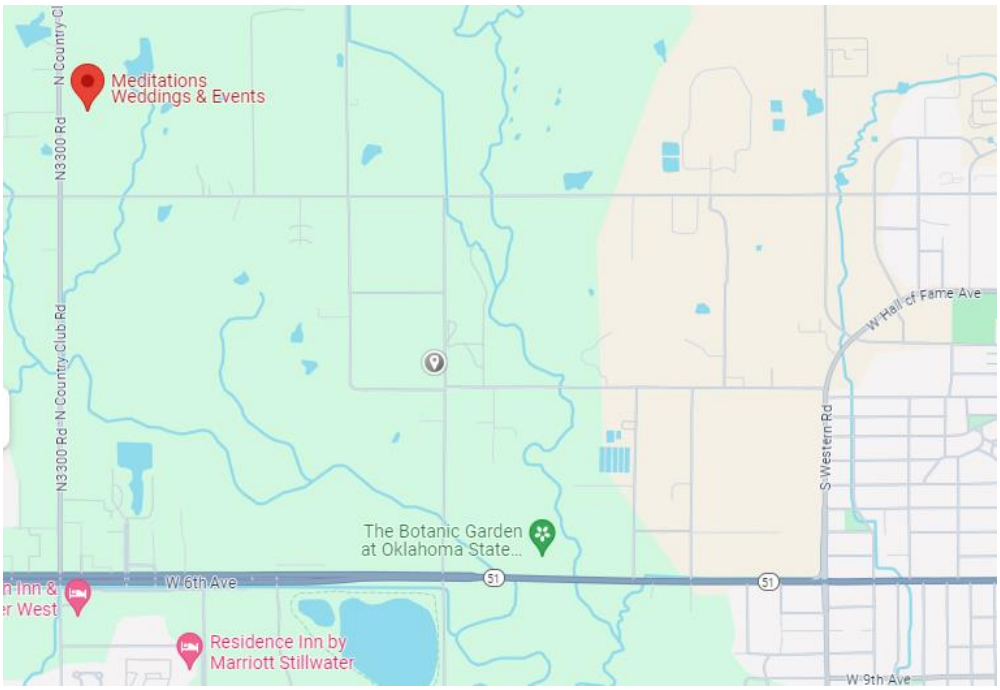
Venue Information

Meditations is located at: 1205 N Country Club Rd., Stillwater, OK 74075



There is FREE parking located directly in front of the venue.

Thursday, April 04, 2024

7:30 – 8:30am Registration

Welcome

Tom Oomens, Ph.D., OCRID Associate Director and Associate Professor, Department of Veterinary Pathobiology, College of Veterinary Medicine, Oklahoma State University

8:30 – 8:50am

Opening Remark

Kenneth W. Sewell, Ph.D., Vice President for Research, Oklahoma State University

Director's Report

Lin Liu, Ph.D., FAPS, OCRID Director and Regents Professor, Lundberg-Kienlen Chair in Biomedical Research, Department of Physiological Sciences, College of Veterinary Medicine, Oklahoma State University.

Session I

Session Chair: Jordan Metcalf – OCRID Co-Director and *Professor, Division of Pulmonary, Critical Care & Sleep Medicine Section, College of Medicine, The University of Oklahoma Health Sciences Center*

8:50 – 9:25am Keynote Address

James R. Heath, PhD - President and Professor at Institute for Systems Biology in Seattle, and Professor of Molecular and Medical Pharmacology at UCLA

Extracting Relationships Between T Cell Receptor, T Cell Antigen, And T Cell Phenotype

9:25 - 9:45am **Xufang Deng, Ph.D.**, Assistant Professor, Department of Physiological Sciences, College of Veterinary Medicine, Oklahoma State University

Developing A SARS-CoV-2 Papain-Like Protease Inhibitor with Antiviral Efficacy in a Mouse Model

9:45 -10:05am **Gabriel Cook, Ph.D.,** Assistant Professor, Department of Chemistry, College of Arts and Sciences, Oklahoma State University

Glycosylation and Structural Studies of SARS-CoV-2 Entry Membrane Protein TMPRSS2 (Pilot project)

10:05 -10:25am **Jennifer Rudd, Ph.D., DVM,** Assistant Professor, Department of Veterinary Pathobiology, College of Veterinary Medicine, Oklahoma State University

siRNA-mediated gene silencing to identify functional NETosis pathways in a feline model for COVID-19 (Pilot project)

Coffee Break

10:30 - 10:50am

Session II

Session Chair: Marianna Patrauchan, Ph.D., Professor, Department of Microbiology and Molecular Genetics, College of Arts and Sciences, Oklahoma State University

10:50 -11:25am Keynote Address

Jay Kolls, M.D., Professor of Medicine and Pediatrics, John W Deming Endowed Chair in Internal Medicine, Director of the Center for Translational Research in Infection and Inflammation at the Tulane School of Medicine

Tissue Resident Memory Cells in the Respiratory Tract

11:25 -11:45am **Sunil More, Ph.D., DVM**, Assistant Professor, The Department of Veterinary Pathobiology, College of Veterinary Medicine, Oklahoma State University

Interferon-Mediated Impairment in Macrophage Antibacterial Activity during SARS-CoV-2 and Klebsiella pneumoniae Co-Infection (Pilot project)

11:45 -12:05pm **Karen Wozniak, Ph.D.,** Associate Professor, The Department of Microbiology and Molecular Genetics, College of Arts and Sciences, Oklahoma State University

Innate Immune Cell Mechanisms of Antifungal Activity

12:05 -12:25pm **Yong Cheng, Ph.D.,** Assistant Professor, Department of Biochemistry and Molecular Biology, Division of Agricultural Sciences and Natural Resources, Oklahoma State University

Non-tuberculous Mycobacterial Infection in Cystic Fibrosis

Lunch and Group Photo

12:30 – 2:00pm

Session III

Session Chair: Veronique Lacombe, Ph.D., The Department of Physiological Sciences, College of Veterinary Medicine, Oklahoma State University

2:00 - 2:35pm Keynote Address

Barry Stripp, Ph.D., Professor of Medicine and Biomedical Sciences, Goldsmith Chair in Gene Therapeutics Research, Director of Lung Stem Cell Research – Lung and Regenerative Medicine Institutes, and Director of Postdoctoral Scientist Program at Cedars-Sinai Medical Center

Mechanisms of epithelial progenitor cell dysfunction and tissue remodeling in lung disease

2:35 - 2:55pm **Susan Schoeder, Ph.D.,** Associate Professor, The Departments of Chemistry & Biochemistry and Microbiology & Plant Biology, Dodge Family College of Arts and Sciences, The University of Oklahoma

Direct RNA Nanopore Sequencing to Identify Epitranscriptomic Changes in Response to Influenza (Pilot project)

2:55 – 3:15pm **José Alberola-Ila, M.D., Ph.D.,** Professor, Arthritis & Clinical Immunology Research Program, Oklahoma Medical Research Foundation

Role of invariant Natural Killer T cells (iNKTs) during early responses to influenza.

3:15 – 3:25pm Animal Models Core Report

Myron Hinsdale, Ph.D., DVM, Associate Professor, Department of Physiological Sciences, College of Veterinary Medicine, Oklahoma State University

3:25 - 3:35pm Immunopathology Core Report

Rudra Channappanavar, Ph.D., DVM, Assistant Professor, Veterinary Pathobiology, College of Veterinary Medicine, Oklahoma State University

3:35 - 3:45pm Molecular Biology Core Report

Lin Liu, Ph.D., FAPS, Professor, Department of Physiological Sciences, College of Veterinary Medicine, Oklahoma State University

3:45 – 3:50pm Closing Remarks

Refreshments and Poster Session
3:50 – 5:05pm

Award Presentation
5:05 – 5:20pm

Reception (Invitation only)
5:45 – 7:30pm

Keynote Speaker Selection and Abstract Screening Committee

• Tom Oomens – Chair	College of Veterinary Medicine, OSU
• Yu Feng	College of Engineering, Architecture, and Technology, OSU
• Marianna Patrauchan	College of Arts and Sciences, OSU
• Yong Cheng	Ferguson College of Agriculture, OSU
• Wenxin Wu	College of Medicine, OU-HSC
• Susan Schroeder	College of Arts and Sciences, OU-HSC
• Christina Bourne	College of Arts and Sciences, OU-Norman
• Chaoqun Huang	College of Veterinary Medicine, OSU

Abstract List

Undergraduate Students

101.	Blackburn, Adriahna	*A paradoxical role for the PrtR repressor in non-canonical pyocin expression seen in Pseudomonas aeruginosa*
102.	Brown, Elijah	*Development of a new drug for cystic fibrosis patients with non-tuberculous mycobacterial infection*
103.	Cronic, Elyse	*Identification of the Antifungal Mechanism of EIPE-1 against Cryptococcus neoformans*
121.	Fleming, Owen	*Characterization of Microvesicles from Senescent Macrophages*
104.	Li, Cloris	*The Effect of Iron on Multiple Genes Associated with Idiopathic Pulmonary fibrosis*
105.	Lieberman, Jacob	*Antifungal Activity of Novel Macrocycle Derivatives on Cryptococcus neoformans*
106.	Masterson, Regan	*The Differential Expression Levels of Anti-viral Long Non-Coding RNAs during Influenza Virus Infection*
107.	Meeker, Amber	*Understanding Immune Interactions Between Epithelial Cells and Macrophages during Mycobacterial Infection*
108.	Morgan, Olivia	*PtsN, a component of the nitrogen-related phosphotransferase system, is a newfound regulator of the T3SS in Pseudomonas aeruginosa*
109.	Niko, Erika	*Identification of Iron-Regulated Novel Long Non-Coding RNAs in Human Pulmonary Fibroblasts*
132.	Ramos-Leyva, Aidaly	*Investigate the Role of Macrophage-derived Microvesicles in the Mycobacteria-host Interactions*
110.	Roach, Megan	*Antifungal Mechanisms of Action by Dendritic Cell Lysosome Proteins*
111.	Spurlock, Mason	*Peptidylprolyl Isomerase-C Is Upregulated in Lung Fibroblasts of Human and Mouse Pulmonary Fibrosis*

Graduate Students

112.	Achour, Myriam	*Calcium Sensor, EfhP, Interacts with Protein Partners to Regulate Virulence in Pseudomonas aeruginosa*
113.	Ahmed, Kainat	*Exploiting HBx liquid-liquid phase separation to treat HBV-driven hepatocellular carcinoma*
114.	Basavaraju Nanjegowdu, Patil	*A next generation single-cycle Respiratory Syncytial Virus vaccine with enhanced interferon induction*
115.	Bhowmik, Niladri	*Identification of Secondary Metabolites and Biosynthetic Gene Clusters from Cystic Fibrosis Microbiomes*
116.	Braga, Reygan	*Exploring the Ca^{2+}-Regulated Molecular Mechanisms Involved in Pseudomonas aeruginosa Interactions with Host Cells.*
117.	Chanda, Debarati	*Acellular human amniotic fluid-derived extracellular vesicles as novel anti-inflammatory therapeutics against SARS-CoV-2*

118.	Conn, Brittney	*The Role of Differentially-Regulated Genes during the Interactions of Human Airway Phagocytes with Cryptococcus neoformans*
119.	Dagnell, Audrey	*Mycobacterial protein section system regulates the expression of host long non-coding RNAs in macrophages*
120.	Deng, Quanjin	*Iron controls HIPK2 through SH3RF1/SIAH1 and activates lung fibroblast via TGFβ/SMAD pathway*
122.	Ghimire, Roshan	*Toll like receptor 7 (TLR7)-mediated antiviral response protects mice from lethal SARS-CoV-2 infection.*
123.	Gunasekara, Sachithra	*Differential Activation of Neutrophil Responses by SARS-Cov-2 Variants of Concern and its' Correlation with Severe Respiratory Outcomes in a Translational Feline Model for COVID-19*
124.	Guthrie, Carlyn	*Evaluating novel dual vaccine efficacy against SARS-CoV-2 and tuberculosis infection*
125.	Hansen, Autumn	*Alternative Cell Lysis Pathways for Pyocin Release in Pseudomonas aeruginosa*
126.	Hull, Kenzie	*CarP as Novel Ca^{2+} Sensing Regulator of Metabolism and Virulence in Pseudomonas aeruginosa*
127.	Jhandai, Prince	*Genome-scale Identification of lncRNAs that Protect against Influenza Virus Infection using a CRISPR Activation Screen*
128.	Kotey, Stephen	*Intracellular Iron Accumulation Facilitates Mycobacterial Infection in Old Mouse Macrophages*
129.	Murugesan, Jeeviya	*Manipulating a viral virulence factor to improve systemic and mucosal immune responses by a live-attenuated Respiratory Syncytial Virus vaccine*
130.	Nair, Ayesha	*The Role of Differentially-regulated Genes in the Outcome of Murine Phagocyte-cryptococcal Interaction*
131.	Ogunleye, Tiwalola	*Recombinant Expression and Purification of TMPRSS2 for Structural Characterization Studies*
133.	Reel, Jessica	*Investigating the role of T cell-derived Acetylcholine during Influenza A Infection*
136.	Santhosh, Keerthana	*Differential Regulation Of Poly(Adp-Ribose) Polymerases by Mycobacterium Abscessus Infection In Human Macrophages*
137.	Shatnawi, Shaoroq	*Utilizing Feline Lentiviral Infection to Establish a Translational Model for COVID-19 in People with Human Immunodeficiency Virus Infection*
138.	Shrestha, Rakshya	*SARS-CoV-2-induced TLR-ERK1/2 activation promotes dysregulated immunity.*
139.	Soriano, Adam	*Unveiling Novel Iron Response Element-Containing Genes in Coding Sequences: Identification and Validation*
140.	Surendran, Akshaya	*Fus Plays A Role in Fibroblast Activation and Circcol1a1 Biogenesis*
141.	Varghese, Elizabeth	*Unravelling The Role of Poly(Adp-Ribose) Polymerases in Sars-Cov-2 Infection- Expression Dynamics and Knockdown Insights*
142.	Varghese, Jesna	*Alternative pyocin production in xerC mutants of Pseudomonas aeruginosa is impacted by mutant forms of DNA repair proteins*

143. Whitley, Cody	*Nox2 activation promotes SARS-CoV-2-induced lung inflammation and severe pneumonia.*
144. Williams, Abigail	*Canonical ILC2 function during IAV infection is protected through male sex-intrinsic factors*
145. Zhang, Xiaoming	*Beyond the Spike: Unraveling the Symphony of Non-Spike Mutations in SARS-CoV-2 Omicron BA.1 Attenuation*

Post-Doctoral Fellows

146. Behura, Assirbad	*Genome-wide identification of 3'-UTR-iron response element (IRE) containing genes and their regulation in macrophages by Mycobacterium abscessus Infection*
147. Elmayet, Fouad	*A Cell Cycle-Regulator, E2F2, and Glucocorticoid Receptor Cooperatively Transactivate the Bovine Alphaherpesvirus 1 Immediate Early Transcription Unit 1 Promoter.*
148. Harrison, Kelly	*A Cell Cycle-Regulator, E2F2, and Glucocorticoid Receptor Cooperatively Transactivate the Bovine Alphaherpesvirus 1 Immediate Early Transcription Unit 1 Promoter.*
149. Roe, Mandi	*Age shapes the myeloid cell antiviral response in a human lung model*
134. Rochowski, Matt	*Influenza Viral Replication is Dependent on Bronchial Epithelial Glucose Metabolism*
135. Rochowski, Matt	*Impact of SARS-CoV-2 Infection on Glucose Metabolism in a Feline Model*
150. Subramaniyan, Bharathiraja	*An in vitro 3D human upper airway tissue model to study epithelial and immune cell responses upon SARS-CoV-2 infection*
151. Vaddadi, Kishore	*PARP16 Enhances Influenza A Virus Replication by Facilitating Its Life Cycle*

Participants

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