

8th Annual Research Symposium

Centers of Biomedical Research Excellence



OCRID

**OKLAHOMA CENTER FOR RESPIRATORY
AND INFECTIOUS DISEASES**

Date: Tuesday and Wednesday, April 6th and 7th, 2021

Time: Morning Session: 9am-11am—Afternoon Session 2pm-4pm

Held Virtually via Zoom



OKLAHOMA CENTER FOR RESPIRATORY & INFECTIOUS DISEASES

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Tuesday, April 6, 2021

Morning Session (Session Chair: Lin Liu Ph.D., Physiological Sciences, College of Veterinary Medicine, Oklahoma State University)

[Zoom Morning Session Link](#)

- 09:00-09:10 **Opening Remarks**
Kenneth Sewell, Ph.D., Vice President of Research, Oklahoma State University
Carlos Risco, D.V.M., DACT, Dean, College of Veterinary Medicine, Oklahoma State University
Special Recognition Plaques Presentation
Lin Liu, Ph.D., Director, Oklahoma Center for Respiratory and Infectious Diseases
- 09:10-09:40 **Keynote Address #1**
Arturo Casadevall, M.D., Ph.D., Professor, Molecular Microbiology & Immunology, Bloomberg School of Public Health, John's Hopkins University
On Virulence
- 09:40-10:05 **Phase II Project Presentation #1**
Marianna Patrauchan, Ph.D., Professor, Microbiology and Molecular Genetics, College of Arts and Sciences, Oklahoma State University
Two pathways of calcium signaling control virulence and resistance in a human pathogen Pseudomonas aeruginosa
- 10:05-10:30 **Phase II Project Presentation #2**
Veronique Lacombe, Ph.D., Professor, Physiological Sciences, College of Veterinary Medicine, Oklahoma State University
Glucose Transport in the Diabetic Lung: Novel Therapeutic
- 10:30-10:40 **Pilot Project Presentation #1:**
Rakhi Rajan, Ph.D., Associate Professor, Chemistry and Biochemistry, College of Arts and Sciences, University of Oklahoma
Computational and Evolutionary Analyses of SARS-CoV-2 S Protein for Drug Development Strategies
- 10:40-10:50 **Pilot Project Presentation #2:**
Daniel Lin, Ph.D., Associate Professor, Department of Nutritional Sciences, College of Education and Human Sciences, Oklahoma State University
Xanthophyll metabolism in RIG-I-MAVS modulated antiviral innate immunity
- 10:50-11:00 **Core Report #1: Immunopathobiology Core**
Craig Miller, DVM, Ph.D., DACVP, Assistant Professor and **Jerry Ritchey, DVM, Ph.D., DACVP**, Professor, Veterinary Pathobiology, College of Veterinary Medicine, Oklahoma State University

Afternoon Session (Session Chair: Shanjana Awasthi Ph.D., Professor, Pharmaceutical Sciences, College of Pharmacy, The University of Oklahoma Health Science Center)

[Zoom Afternoon Session Link](#)

02:00-02:04 Introduction

Post-Doctoral Abstracts

02:04-02:12 Abstract #101 - Monitoring intracellular Ca²⁺ levels induced by extracellular stimuli by using fluorescent marker in Pseudomonas aeruginosa - **Kubo, A.**

02:12-02:20 Abstract #102 - Insight into the mechanism by which OHet72 kills Mycobacterium tuberculosis: Synergy studies – **Sharma, A.**

02:20-02:28 Abstract #103 - T Lymphocyte-mediated Mycobacterial Killing in Nontuberculous Mycobacteria-infected Macrophages Relies on Host Cytosolic RNA Sensing Pathway – **Tan, X.**

02:28-02:36 Abstract #104 - Deciphering the role of PARPs in influenza virus infection – **Vaddadi, K.**

Graduate Student Abstracts

02:36-02:44 Abstract #105 - Improving emphysema treatment: Development and optimization of particles for use in deposition studies to inform computational modeling – **Bourlon, M.**

02:44-02:52 Abstract #106 - RNA Seq Analysis Reveals the Role of Calcium Sensor, EfhP, in Regulating Quorum Sensing and Virulence in Pseudomonas aeruginosa. – **Burch-Konda, J.**

02:52-03:00 Abstract #107 - Chemical Cartography: Unlocking novel ways of understanding disease pathogenesis in Influenza Virus (IAV) infection – **Dean, D.**

03:04-03:12 Abstract #108 - Deficiency of Glutathione Peroxidase 4 in Macrophages Contributes to Lung Fibrosis – **Hewawasan, S.**

03:12-03:20 Abstract #109 - LncRNA SNHG15 positively regulates influenza A virus infection – **Jeyasingh, S.**

03:20-03:28 Abstract #110 - Putative phytase, CarP, plays a role in Ca²⁺ regulation of Pseudomonas aeruginosa metabolism. – **Hull, K.**

03:28-03:36 Abstract #111 - A Calmodulin-like Calcium Binding Protein, EfhP, Acts as a Ca²⁺ sensor in the Human Pathogen Pseudomonas aeruginosa – **Kayastha, B.**

03:36-03:44 Abstract #112 - A single-cycle live RSV vaccine expressing prefusion F protein – **Lamichhane, P.**

03:44-03:52 Abstract #113 - Calcium Enhances the Host-Pathogen Interactions of Pseudomonas aeruginosa with Lung Epithelial Cells. – **Luthra, D.**

03:52-04:00 Abstract #114 - Interactions of Cryptococcus neoformans with Human Airway Phagocytes – **Nelson, B.**

Wednesday, April 7, 2021

Morning Session (Session Chair: Jordan Metcalf MD, Professor, Pulmonary, Critical Care & Sleep Medicine, College of Medicine, The University of Oklahoma Health Science Center)

[Zoom Morning Session Link](#)

- 09:00-09:30 **Keynote Address #2**
Florian Krammer Ph.D., Professor, Microbiology and Immunology, Icahn School of Medicine, Mount Sinai
Antibody responses to SARS-CoV-2 spike protein
- 09:30-9:55 **Phase II Project Presentation #3**
Craig Miller, DVM, Ph.D., DACVP, Assistant Professor, Veterinary Pathobiology, College of Veterinary Medicine, Oklahoma State University
Validation of a naturally-occurring animal model for SARS-CoV-2 infection
- 9:55-10:20 **Phase II Project Presentation #4**
Lucila Garcia-Contreras, Ph.D., Associate Professor, Department of Pharmaceutical Sciences, College of Pharmacy, The University of Oklahoma Health Science Center
Preclinical Assessment of OHet72 as a new drug in the armamentarium against TB and MDR-TB
- 10:20-10:30 **Pilot Project Presentation #3:**
Joshua Butcher, Ph.D., Assistant Professor, Physiological Sciences, College of Veterinary Medicine, Oklahoma State University
Augmented Muscle Mass as a Buffer Against Influenza
- 10:30-10:40 **Pilot Project Presentation #4:**
Christina Bourne, Ph.D., Assistant Professor, Chemistry and Biochemistry, College of Arts and Sciences, The University of Oklahoma
Building a Screening Platform to Target Coronaviral M-N Protein Interactions
- 10:40-10:50 **Core Report #2: Animal Models Core**
Myron Hinsdale, DVM, Ph.D., Associate Professor, Physiological Sciences, College of Veterinary Medicine, Oklahoma State University
- 10:50-11:00 **Core Report #3: Molecular Biology Core**
Lin Liu, Ph.D., Professor, Physiological Sciences, College of Veterinary Medicine, Oklahoma State University

Afternoon Session (Session Chair: Dr. Erika Lutter Ph.D., Associate Professor, Microbiology and Molecular Genetics, College of Arts and Sciences, Oklahoma State University)

[Zoom Afternoon Session Link](#)

02:00-02:04 Introduction

Graduate Student Abstracts Cont.

02:04-02:12 Abstract #115 - Strategies for developing potent coronavirus antivirals using structural and evolutionary insights regarding Spike protein – **Newsome, S.**

02:12-02:20 Abstract #116 – Pulmonary Glucose Dysregulation Leads to Increased Influenza Viral Replication – **Rochowski, M.**

02:20-02:28 Abstract #117 - Elevated Calcium Levels Increase Resistance of Pseudomonas aeruginosa to Polymyxin B – **Salpadoru, T.**

02:28-02:36 Abstract #118 - Artificial Activation of a Type-II Toxin-Antitoxin System from Pseudomonas aeruginosa. – **Snead, K.**

02:36-02:44 Abstract #119 - Establishing a naturally-occurring feline model for SARS-CoV- 2 infection and disease – **Tamil Selvan, M.**

02:44-02:52 Abstract #120 - A Virus-like Particle Vaccine for Respiratory Syncytial Virus – **Terhuja, M.**

02:52-03:00 Abstract #121 - Identification of an Intestinal Microbiota Signature Associated with the Severity of Necrotic Enteritis – **Yang, Q.**

Undergraduate Student Abstracts

03:04-03:12 Abstract #122 - The Role of β -class Carbonic Anhydrases psCA1, psCA2 and psCA3 in Virulence of the Human Pathogen Pseudomonas aeruginosa – **Braga, R.**

03:12-03:20 Abstract #123 - Effects of Organoantimony Compounds on Fungal Pathogens Cryptococcus neoformans and Candida albicans – **Cotton, K.**

03:20-03:28 Abstract #124 – Interactions of Cryptococcus Neoformans with Human Airway Phagocytes – **Daugherty, C.**

03:28-03:36 Abstract #125 - Is the PaParDE Toxin-Antitoxin System Used for Phage Defense in Pseudomonas aeruginosa? – **Davis, J.**

03:36-03:44 Abstract #126 - Pulmonary Dendritic Cell Subset Interactions with Cryptococcus neoformans – **Determann, B.**

03:44-03:52 Abstract #127 - Anti-Fungal Activity of Lysosomal Proteins and their Effects on Cryptococcus neoformans – **Posey, S.**

03:52-04:00 Abstract #128 - Membrane Directed Mechanism Towards Gram-Positive Pathogenic Bacteria Exhibited by Novel Melanin Inspired Compound – **Reed, D.**