



# Oklahoma Center for Respiratory and Infectious Diseases

## 6TH ANNUAL RESEARCH SYMPOSIUM



TUESDAY,

APRIL 9TH, 2019

8:30AM–5:00PM

THE CONOCOPHILLIPS OSU ALUMNI CENTER  
201 SOUTH HESTER STREET, STILLWATER, OK 74078

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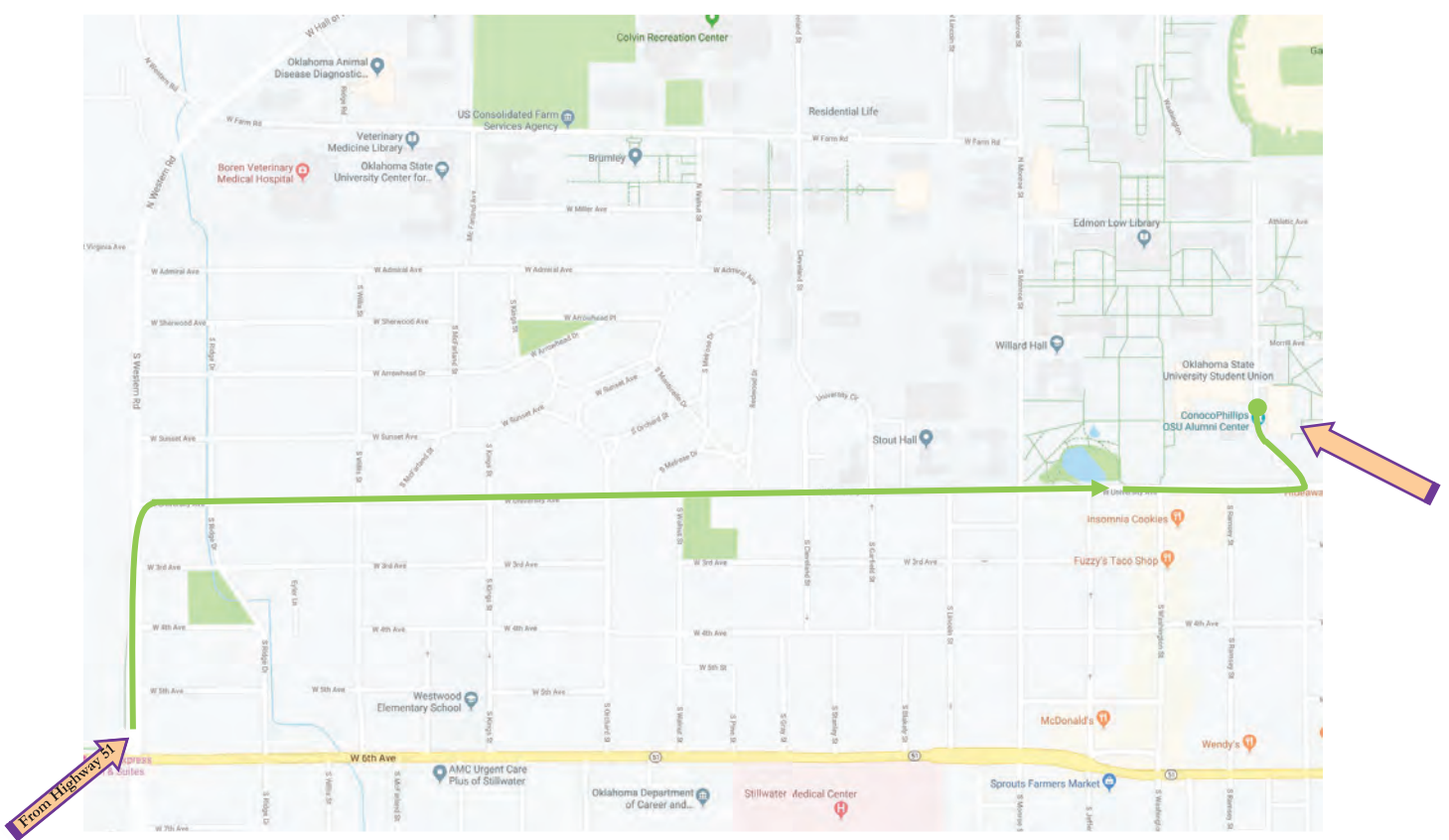
# OKLAHOMA CENTER FOR RESPIRATORY & INFECTIOUS DISEASES

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## Contents

|                     |          |
|---------------------|----------|
| Map to the Venue    | Pg. 2    |
| Schedule            | Pg. 3-5  |
| Abstract List       | Pg. 6-7  |
| Abstracts           | Pg. 8-50 |
| List of Participant | Pg. 51   |

# MAP OF THE VENUE



## Coming from Highway 51:

- Turn Left on to Western Ave.
- Turn Right on to University Ave.
- Turn Left on to Hester Ave.
- The Conoco Phillips Alumni Center is on your right, you may park in the Student Union Parking Garage on your left

**Tuesday, April 9, 2019**

07:30-08:30 Registration and Breakfast; Please drop off posters at the registration table.

**Session I (Session Chair: Jordan Metcalf, M.D., Medicine, University of Oklahoma Health Sciences Center)**

08:30-08:50 Opening Remarks

**Kenneth Sewell, Ph.D.**, Vice President of Research, Oklahoma State University

**Jeanette M. Mendez, Ph.D.**, Interim Dean, College of Arts and Sciences, Oklahoma State University

Director's Report

**Lin Liu, Ph.D.**, Physiological Sciences, Center for Veterinary Health Sciences, Oklahoma State University

My Road to Success in Obtaining R01

08:50-09:00 **Heather Fahlenkamp, Ph.D.**, Chemical Engineering, College of Engineering and Architecture Technology, Oklahoma State University

09:00-09:10 **Shitao Li, Ph.D.**, Physiological Sciences, Center for Veterinary and Health Sciences, Oklahoma State University

**Session II (Session Chair: Tom Oomens, Ph.D., Veterinary Pathobiology, Center for Veterinary and Health Sciences, Oklahoma State University)**

09:10-09:45 Keynote Address #1

**Bruce A. Stanton, Ph.D.**, Professor of Microbiology and Immunology, Andrew C. Vail Professor, Director of the Lung Biology Center, Director of the Center for Environmental Health Sciences, Geisel School of the Medicine, Dartmouth College

*Host-Pathogen Interactions in Cystic Fibrosis Lung Infections: Role of Extracellular Vesicles and siRNA*

09:45-10:10 Phase II Project Presentation #1

**Marianna Patrauchan, Ph.D.**, Microbiology and Molecular Genetics, College of Arts and Sciences, Oklahoma State University

*Calcium as a second messenger in Pseudomonas aeruginosa*

10:10-10:25 Pilot Project Presentation #2

**Lucila Garcia-Contreras, Ph.D.**, Pharmaceutical Sciences, College of Pharmacy, The University of Oklahoma Health Sciences Center

*OHet72: A potential new drug in the armamentarium against TB and MDR-TB*

10:25-10:35 Core Report #1: Animal Models Core

**Myron Hinsdale, DVM, Ph.D.**, Physiological Sciences, Center for Veterinary and Health Sciences, Oklahoma State University

10:35-11:00 Coffee Break

**Session III (Session Chair: Shanjana Awasthi, Ph.D. Pharmaceutical Sciences, College of Pharmacy, University of Oklahoma Health Sciences Center)**

- 11:00-11:25 Phase II Project Presentation #2  
**Shitao Li, Ph.D.**, Physiological Sciences, Center for Veterinary and Health Sciences, Oklahoma State University  
*ZFC3H1 Regulation of Host Defense and Influenza A Virus Pathogenesis*
- 11:25-11:40 Pilot Project Presentation #2  
**Yu Feng, Ph.D.**, Chemical Engineering, College of Engineering and Architecture Technology, Oklahoma State University  
*Computational Modeling of inhaled IAV-laden droplets in the Respiratory Tracts of Rat and Human*
- 11:40-11:55 Pilot Project Presentation #3  
**Karen Wozniak, Ph.D.**, Microbiology and Molecular Genetics, College of Arts and Sciences, Oklahoma State University  
*Interactions of Murine Pulmonary Macrophage Subsets with *Cryptococcus neoformans**
- 11:55-12:05 Abstract #1  
Hang Zhao, Department of Chemistry and Biochemistry, University of Oklahoma  
*Small molecule condensin inhibitors*
- 12:05-12:15 Core Report #2: Immunopathology Core  
**Jerry Ritchey, DVM, Ph.D.**, Veterinary Pathobiology, Center for Veterinary and Health Sciences, Oklahoma State University
- 12:15-1:30 Group Photo and Lunch

**Session IV (Session Chair: Heather Fahlenkamp, Ph.D., Chemical Engineering, College of Engineering and Architecture Technology, Oklahoma State University)**

- 01:30-02:05 Keynote Address #2  
**Rodney Tweten, Ph.D.**, OU Presidential Professor, George Lynn Cross Research Professor, Microbiology and Immunology, The University of Oklahoma Health Sciences Center  
*Structure, Function and Evolution of the Cholesterol-Dependent Cytolysins*
- 02:05-02:30 Phase II Project Presentation #3  
**William Michael McShan, Ph.D.**, Pharmaceutical Sciences, College of Pharmacy, University of Oklahoma Health Sciences Center  
*Streptococcus pneumoniae Chromosomal Islands: Insights into Virulence and Horizontal Gene Transfer*
- 02:30-02:55 Phase II Project Presentation #4  
**Veronique Lacombe, Ph.D.**, Physiological Sciences, Center for Veterinary and Health

Sciences, Oklahoma State University

Glucose Transport in the Diabetic Lung: Novel Therapeutic Targets

02:55-03:10

Pilot Project Presentation #4

**Susan Schroeder, Ph.D.**, Chemistry and Biochemistry, Microbiology and Plant Biology,  
College of Arts and Sciences, The University of Oklahoma-Norman

The challenges of Predicting Human Endogenous Retroviral RNA structure and Function

03:10-03:25

Pilot Project Presentation #5

**Michael Davis, Ph.D.**, Physiological Sciences, Center for Veterinary and Health Sciences,  
Oklahoma State University

Effect of airway mucosal cooling and hyperosmolarity on innate immune function

03:25-03:35

Abstract #2

**Amal H. Yahya.**, Microbiology and Molecular Genetics, College of Arts and Sciences,  
Oklahoma State University

Identifying Proteins with Novel Roles in Pseudomonas aeruginosa Biofilm Formation

03:35-03:45

Core Report #3: Molecular Biology Core

**Lin Liu, Ph.D.**, Physiological Sciences, Center for Veterinary and Health Sciences,  
Oklahoma State University

03:45-04:00

Refreshment Break

04:00-04:50

Poster Session

04:50-05:00

Announcement of Poster Competition Winners

# ABSTRACT LIST

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| <b>Presenter</b>            | <b>Abstract No.</b> | <b>Abstract Title</b>   |
|-----------------------------|---------------------|---|
| Baggett, N.                 | 101                 | Effects of Putative Cyclic Nucleotide-Binding Motifs on the Function of a Biofilm Regulator   |
| Bamunuarachchi, G.          | 102                 | Inhibition of Tankyrase Attenuates Influenza A Virus Replication  |
| Beakley, S.                 | 103                 | Antifungal Activity of Dendritic Cell Lysosomal Proteins  |
| Bixler, K.                  | 104                 | Identifying and Understanding Multidrug Resistant Pathogens Isolated from Cystic Fibrosis Patients  |
| Braga, R.                   | 105                 | The Role of $\beta$ -Carbonic anhydrase, psCA1 in virulence of <i>Pseudomonas aeruginosa</i>  |
| Bronson, A.                 | 106                 | Determining the Mechanism of a Putative Biofilm Regulator, PA14_54940   |
| Campbell, G -<br>Colton, W. | 107                 | Identifying the regulon of a new DNA-binding protein important for bacterial biofilm formation  |
| Cannon, B.                  | 108                 | Mechanisms of Lysosomal Cathepsin B Degradation of <i>Cryptococcus neoformans</i>   |
| Conn, B.                    | 109                 | Antifungal activity of EIPE-1, an eumelanin-inspired compound against <i>Cryptococcus neoformans</i> and <i>Candida albicans</i>              |
| Derouen, J.                 | 110                 | Protein Kinase A Manipulation by <i>Chlamydia trachomatis</i> During Infection  |
| Dohmen, R.                  | 111                 | Sequence Conservation of the Novel Calcium Sensor, EF-hand Protein, EfhP, Among <i>Pseudomonads</i>   |
| Doranga, S.                 | 112                 | NF $\kappa$ B Signaling Pathway Components are Associated with <i>Coxiella burnetii</i> Growth and Development during Infection of Host Cells |
| Eslinger, C.                | 113                 | Global Demethylation Attenuates Glutaminase and Nerve Growth Factor in TNBS-Induced Colitis   |
| Figueroa, K.                | 114                 | Does Calcium Regulate Rhamnolipid Production in <i>Pseudomonas aeruginosa</i> ?   |
| Hawkins, A.                 | 115                 | Analysis of the Interactions Between <i>Cryptococcus neoformans</i> and Pulmonary Macrophages.  |
| Hayati, H.                  | 116                 | Deposition Comparisons of IAV-Laden Particles in Rat and Human Respiratory Systems: An In Silico Study  |
| Huang, C.                   | 117                 | Iron-responsive element regulation system in idiopathic pulmonary fibrosis  |

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|------------------|-----|--|
| Kayastha, B.     | 118 | A Novel Calcium (Ca <sup>2+</sup> ) Sensor, EfhP, Mediates Ca <sup>2+</sup> Regulation of Virulence in <i>Pseudomonas aeruginosa</i>                       |
| King, M.         | 119 | A Putative Phytase, CarP, Required for Calcium Tolerance and Virulence in <i>P. aeruginosa</i> , is Differentially Regulated by Host Factors.              |
| La Force, C.     | 120 | Cloning and expression of <i>Chlamydia trachomatis</i> inclusion membrane proteins   |
| Luthra, D.       | 121 | Effect of high Ca <sup>2+</sup> in Enhancing Adherence of <i>Pseudomonas aeruginosa</i> to Lung Epithelial Cells.  |
| Mares, S.        | 122 | Conservation of Calcium-Regulated Protein, CarP, Involved in Virulence, Among Clinical and Environmental Isolates of <i>Pseudomonas aeruginosa</i>         |
| Maritz, E.       | 123 | Identification of Fungal Pathogens in Cystic Fibrosis Patients   |
| McCoy, J.        | 124 | Investigation of Calcium-regulated virulence of <i>Pseudomonas aeruginosa</i> in <i>Galleria mellonella</i>  |
| Morrissey, M.    | 125 | Transcriptional Regulation of the Virulence Associated Gene <i>efhP</i> By Calcium (Ca <sup>2+</sup> ) in the Human Pathogen <i>Pseudomonas aeruginosa</i> |
| Nelson, B.       | 126 | Interactions of <i>Cryptococcus neoformans</i> with Human Airway Phagocytes  |
| Patil, G.        | 127 | TRIM41-Mediated Ubiquitination of Nucleoprotein Limits Vesicular Stomatitis Virus Infection  |
| Posey, S.        | 128 | Anti-fungal Activity of Lysosomal Proteins and their Effects on <i>Cryptococcus neoformans</i>   |
| Pushparaj, S.    | 129 | LncRNA SNHG15 regulates influenza A virus infection  |
| Sah, P.          | 130 | Investigating the function of <i>Chlamydia trachomatis</i> Inclusion Membrane Protein CTL0478  |
| Salinas, C.      | 131 | Abnormal Ion Concentration in Cystic Fibrosis Lungs Impact Rhamnolipid Production in <i>Pseudomonas aeruginosa</i> .                                       |
| Salpadoru, T.    | 132 | Mechanisms Contributing to Ca <sup>2+</sup> -Induced Polymyxin B Resistance in <i>Pseudomonas aeruginosa</i> .   |
| Senavirathna, L. | 133 | Effects of long noncoding RNA FENDRR on asbestos-induced pulmonary fibrosis and fibroblast proliferation   |
| Shafer, S.       | 134 | Finding New Signaling Pathways that Govern Biofilm Formation by <i>Pseudomonas aeruginosa</i>  |
| Shenoi, J.       | 135 | Protease Inhibition Protects Surfactant Protein B in An In Vitro Model of Meconium Aspiration Syndrome   |



|                       |     |   |
|-----------------------|-----|---|
| Song, K.              | 136 | Non-proteolytic ubiquitination of OTULIN regulates NF- $\kappa$ B signaling pathway             |
| Terrell, J. – Pan, S. | 137 | Identifying anti-biofilm targets within <i>Pseudomonas aeruginosa</i>                           |
| Wang, L.              | 138 | FIP200 is essential for cytosolic RNA-mediated innate immunity by facilitating RIG-I activation |
| Yahya, A.             | 139 | Identifying Proteins with Novel Roles in <i>Pseudomonas aeruginosa</i> Biofilm Formation        |
| Yang, Q.              | 140 | Forskolin and butyrate act synergistically in protecting chickens from necrotic enteritis       |
| Zhao, H.              | 141 | Small molecule condensin inhibitors   |
| Zhu, Z.               | 142 | Influenza Virus Up-regulates Poly(ADP-ribose) Polymerase 9 and 14 Expression                    |