

Centers of Biomedical Research Excellence



# Oklahoma Center for Respiratory & Infectious Diseases

## 3RD ANNUAL RESEARCH RETREAT



Tuesday, April 19th  
7:30AM - 5:00PM



Stillwater Community  
Center  
Stillwater, OK

2016

**OFFICIAL PROGRAM**

Sponsored By: \_\_\_\_\_

National Institutes of Health Centers of Biomedical Research Excellence, Grant # P20GM103648

OSU VP Office for Research

OSU Center for Veterinary Health Sciences



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Tuesday, April 19, 2016

- 7:30 AM – 8:30 AM Registration and Breakfast
- 7:30 AM – 8:30 AM Poster Setup
- 8:30 AM – 8:35 AM Welcome Remarks by Kenneth Sewell, Ph.D., Vice President for Research, Oklahoma State University
- 8:35 AM – 8:45 AM Director's Report by Lin Liu, Ph.D., Physiological Sciences, Center for Veterinary and Health Sciences, Oklahoma State University

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

- 8:45 AM – 9:15 AM Keynote Address # 1  
**Antonios G. Mikos, Ph.D.** — Louis Calder Professor of Bioengineering, Chemical and Biomolecular Engineering, Director, Center for Excellence in Tissue Engineering, Director, J.W. Cox Laboratory for Biomedical Engineering, Rice University  
*"Biomaterials for Tissue Engineering"*
- 9:15 AM – 9:40 AM CoBRE Project 2 Presentation  
**Heather Gappa-Fahlenkamp, Ph.D.** — Chemical Engineering, College of Engineering and Architecture Technology, Oklahoma State University  
*"The Response of Human Alveolar Epithelial Cells in a Novel Tissue-Equivalent Respiratory Model to H1N1 and H3N2 Influenza A Viruses"*
- 9:40 AM – 9:55 AM CoBRE Pilot Project 1 Presentation  
**Adam S. Duerfeldt, Ph.D.** — Department of Chemistry & Biochemistry, College of Arts and Sciences, University of Oklahoma  
*"Exploration of ClpP Activation to Treat Respiratory Infections in Cystic Fibrosis"*
- 9:55 AM – 10:10 AM CoBRE Pilot Project 2 Presentation  
**Shitao Li, Ph.D.** — Physiological Sciences, Center for Veterinary and Health Sciences, Oklahoma State University  
*"Influenza-Host Protein Interactions Control Viral Infection and Pathogenesis"*
- 10:10 AM – 10:20 AM Immunopathology Core Report, Jerry Ritchey, DVM, Ph.D., Center for Veterinary and Health Sciences, Oklahoma State University
- 10:20 AM – 10:40 AM Coffee Break



Session II (Session Chair, Susan Kovats, Ph.D. Oklahoma Medical Research Foundation)

- 10:40 AM — 11:10 AM      Keynote Address # 2  
**Robert C. Welliver, Ph.D.** — Hobbs-Recknagel Chair and Chief, Pediatrics Infectious Diseases, College of Medicine, University of Oklahoma Health Sciences Center  
*“The Road to a Respiratory Syncytial Virus Vaccine”*
- 11:10 AM — 11:35 AM      CoBRE Project 1 Presentation  
**Tom Oomens, Ph.D.** — Veterinary Pathobiology, Center for Veterinary and Health Sciences, Oklahoma State University  
*“Developing vaccines for respiratory syncytial virus”*
- 11:35 AM — 11:50 AM      CoBRE Pilot Project 3  
**Dingbo Daniel Lin, Ph.D.** — Nutritional Sciences, College of Human Sciences, Oklahoma State University  
*“ $\beta$ , $\beta$ -carotene 9',10'-oxygenase 2 (BCO2) in influenza virus pneumonia”*
- 11:50 AM — 12:00 PM      Abstract 102  
Erola Ainsua-Enrich, Ph.D.—Arthritis & Clinical Immunology Program, Oklahoma Medical Research Foundation  
*“Anti-viral Immune Response Regulation by IRF4 Dependent DCs during Influenza Infection”*
- 12:00 PM — 1:00 PM      Lunch
- 1:00 PM — 1:20 PM      Group Photo  
*\*Front Lawn Stillwater Community Center*

Session III (Session Chair, Heather Gappa-Fahlenkamp, Ph.D., Oklahoma State University)

- 1:20 PM — 1:30 PM      Animal Model Core Report, Myron Hinsdale, DVM, Ph.D., Center for Veterinary and Health Sciences, Oklahoma State University
- 1:30 PM — 1:40 PM      Molecular Biology Core Report, Lin Liu, Ph.D., Physiological Sciences, Center for Veterinary and Health Sciences, Oklahoma State University



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| 1:40 PM — 2:10 PM | <u>Keynote Address # 3</u><br><b>Kevin S. Harrod, Ph.D.</b> — Benjamin Monroe Carraway Endowed Chair and Professor, Department of Anesthesiology and Perioperative Medicine, University of Alabama at Birmingham<br><i>“Influenza pathogenesis: Molecular mechanisms to drug discovery”</i> |
| 2:10 PM — 2:35 PM | <u>CoBRE Project 4 Presentation</u><br><b>Teluguakula Narasaraju, Ph.D.</b> — Physiological Sciences, Center for Veterinary Health Sciences, Oklahoma State University<br><i>“Role of Neutrophils in Acute Lung Injury During Influenza Pneumonia”</i>                                      |
| 2:35 PM — 3:00 PM | <u>CoBRE Project 3 Presentation</u><br><b>Shanjana Awasthi, Ph.D.</b> — Pharmaceutical Sciences, College of Pharmacy, University of Oklahoma Health Sciences Center<br><i>“Control of lung inflammation by a TLR4-interacting SP-A-derived peptide”</i>                                     |
| 3:00 PM — 3:15 PM | <u>CoBRE Pilot Project 4 Presentation</u><br><b>Marianna A. Patrauchan, Ph.D.</b> — Microbiology and Molecular Genetics, College of Arts and Sciences, Oklahoma State University<br><i>“Do calcium binding proteins regulate Pseudomonas aeruginosa virulence?”</i>                         |
| 3:15 PM — 3:30 PM | <u>CoBRE Pilot Project 5 Presentation</u><br><b>Jennifer H. Shaw, Ph.D.</b> — Integrative Biology, College of Arts and Sciences, Oklahoma State University<br><i>“The Role of Angiogenic Factors in the Development of Atherosclerosis during Chlamydia Pneumoninae Infection”</i>          |
| 3:30 PM — 3:40 PM | <u>Abstract 111</u><br>Rawan Eleshly — Microbiology and Molecular Genetics, Oklahoma State University<br><i>“Antibiotic Resistance in Staphylococcus aureus Isolated from Cystic Fibrosis Patients”</i>   |
| 3:40 PM — 3:50 PM | Refreshment Break   |
| 3:50 PM — 4:50 PM | Poster Session  |
| 4:50 PM — 5:00 PM | Announcement of poster competition winners  |



Abstract list (Listed alphabetically by author's last name.)

| <b>Presenter</b>   | <b>Abstract No.</b> | <b>Abstract Title</b>   |
|--------------------|---------------------|---|
| Achanta, M.        | 101                 | Defects in Proteoglycan Formation Alters Lung Mechanics   |
| Ainsua-Enrich, E.  | 102                 | Anti-viral immune response regulation by IRF4 dependent DCs during influenza infection  |
| Ashar, H.          | 103                 | A novel combination therapy for influenza pneumonia   |
| Bamunuarachchi, G. | 104                 | MicroRNAs Targeting Tankyrase Modulate Influenza A Virus Replication  |
| Behar, A.          | 105                 | Genetic Manipulation of <i>Chlamydia trachomatis</i> Inclusion Membrane Protein CT228 using the Adapted TargeTron System            |
| Bhowmick, R.       | 106                 | Characterization of a Novel Three-Dimensional <i>In Vitro</i> Lung Epithelium   |
| Bhowmick, R.       | 107                 | Effect of Nanoparticle Exposure on the Susceptibility of Human Small Airway Epithelial Cells to Subsequent Influenza Infection      |
| Bhowmik, B.K.      | 108                 | Role of condensins in chromosome segregation of <i>Pseudomonas aeruginosa</i>   |
| Brewer, M.         | 109                 | Characterization of the Release of DotA from <i>Coxiella burnetii</i> into Supplemented Axenic Media                                |
| Derakhsham, M.     | 110                 | Development of Mast Cells from Peripheral Blood Progenitor Cells within a 3D Allergy Tissue Model                                   |
| Eleshy, R.G.       | 111                 | Antibiotic Resistance in <i>Staphylococcus aureus</i> Isolated From Cystic Fibrosis Patients  |
| Fleming, J.        | 112                 | Yeast-two hybrid analysis of <i>Chlamydia trachomatis</i> type III secreted effector proteins                                       |
| Kayastha, B.B.     | 113                 | EfhP, a Putative Calcium Binding Calmodulin like Protein, Plays Role in Calcium Induced Responses of <i>Pseudomonas aeruginosa</i>  |
| Khanam, S.         | 114                 | Intracellular Calcium Homeostasis Regulates Efflux Mediated Tobramycin Resistance in a Human Pathogen <i>Pseudomonas aeruginosa</i> |
| King, M.           | 115                 | Does PA0327 bind calcium and regulate <i>Pseudomonas aeruginosa</i> virulence?  |
| King, M.           | 116                 | CarP, a Putative $\beta$ Propeller Protein, Plays Role in <i>Pseudomonas aeruginosa</i> Response to Calcium                         |
| Mahapatra, S.      | 117                 | <i>Coxiella burnetii</i> employs the Dot/Icm type IV secretion system to modulate host NF- $\kappa$ B/RelA phosphorylation          |
| McAllister, R.     | 118                 | Determination of the Mutation Rates of <i>Staphylococcus aureus</i> Isolated From Cystic Fibrosis Patients                          |



| Presenter          | Abstract No. | Abstract Title   |
|--------------------|--------------|--|
| Meshram, C.D.      | 119          | Minimal requirements for Respiratory Syncytial Virus filamentous Virus-Like Particle formation   |
| Miller, K.E.       | 120          | Temporal alterations in expression of aspartate aminotransferase and glutaminase in dorsal root ganglion neurons: Comparison between rat models of colitis and arthritis |
| More, S.           | 121          | Long non-coding RNA TAPSAR1 regulates influenza virus replication  |
| Richards, C.       | 122          | Transcription of T4ASS ORFs in Spotted Fever Group <i>Rickettsia</i>   |
| Roberts, B.        | 123          | Exploring the potential anti-viral properties of the natural product OSW-1 through long term OSBP depletion  |
| Russ, B.C.         | 124          | The Effect of Environmental Factors on Swarming Motility in a Human Pathogen <i>Pseudomonas aeruginosa</i>   |
| Sathiaseelan, R.   | 125          | A role of IL-21 in pulmonary fibroblast activation   |
| Senavirathna, L.K. | 126          | mRNA and long non-coding RNA profiling of human pulmonary fibroblasts treated with hypoxia and Transforming Growth Factor $\beta$  |
| Senavirathna, L.K. | 127          | Hypoxia induces fibroblast proliferation via HIF2 $\alpha$ and NFAT  |
| Shaw, E.           | 128          | The Effect of Intranasal Infection with “Less Virulent” Spotted Fever Group <i>Rickettsiae</i> on Subsequent <i>Rickettsia rickettsii</i> Pathogenesis in Guinea pigs    |
| Sivasami, P.       | 129          | Improved recovery of pulmonary emphysema by Xylosyltransferase II deficient bone marrow-derived mesenchymal stem cells   |
| Smith, S.          | 130          | An analysis of sub-cellular localization of host sorting nexin 4 and 7 in <i>Coxiella burnetii</i> infected Hela cells   |
| Wang, L.           | 131          | Dynamic and Comparative Influenza-Host Protein Interactomes Define the Role of PKP2 in Viral Polymerase Assembly   |
| Wu, L.             | 132          | $\beta$ , $\beta$ -carotene 9',10'-oxygenase 2 in influenza virus pneumonia  |
| Yang, X            | 133          | Expression library screening identifies microRNAs that regulate Wnt/ $\beta$ -catenin signaling and influenza virus infection  |
| Zhao, H.           | 134          | Growth defects and attenuated virulence correlate strongly with condensins in <i>Pseudomonas aeruginosa</i>  |





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