

Centers for Biomedical Research Excellence



Oklahoma Center for  
Respiratory & Infectious Diseases

# 1<sup>st</sup> Annual Research Retreat

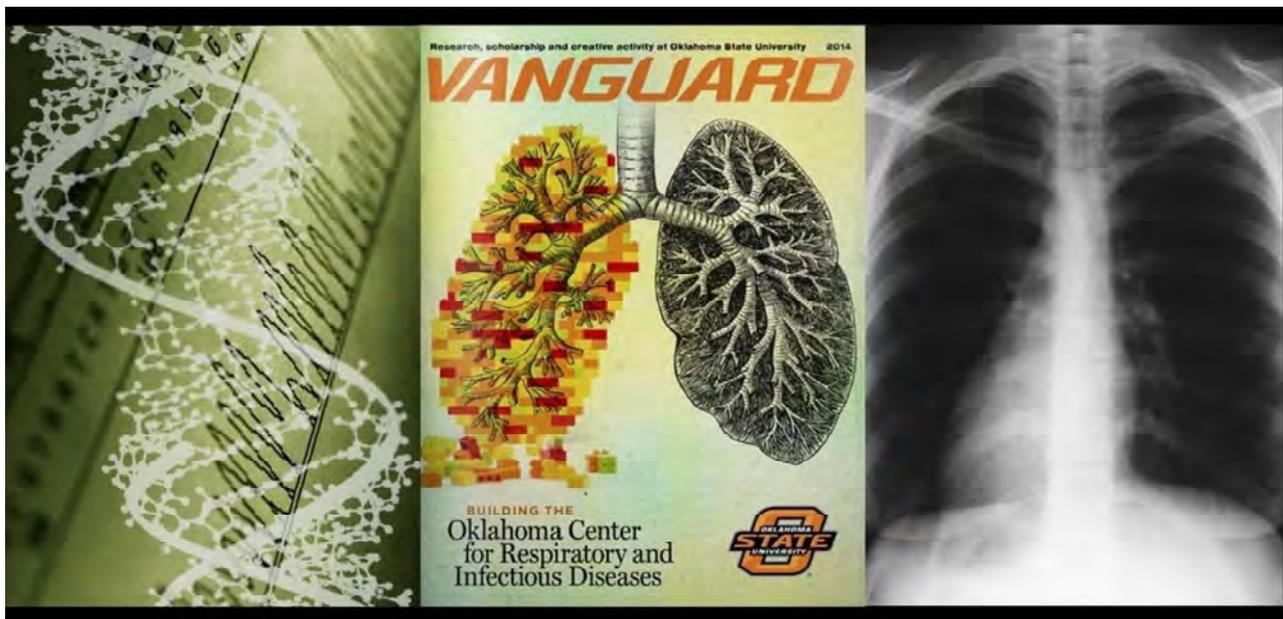
Tuesday, April 22

8AM - 5PM



ConocoPhillips Alumni Center  
Oklahoma State University  
Stillwater, OK

## OFFICIAL PROGRAM



Sponsored By:

NIH CoBRE # GM103648

OSU VP for Research & Technology Transfer



CENTER FOR VETERINARY HEALTH SCIENCES  
Healthy Animals — Healthy People



## Welcome to the 1st Annual Oklahoma Center for Respiratory and Infectious Diseases (OCRID) Research Retreat!

Established in 2013 through an \$11.3 million CoBRE grant from the National Institutes of Health, OCRID is quickly becoming a focal point for expanding respiratory infectious disease research in Oklahoma. We are a multi-institutional center with administrative offices housed in the Center for Veterinary Health Sciences at OSU. Our investigators come from major research institutions across the state of Oklahoma, including 5 colleges at the OSU Stillwater campus, 1 college at the OSU Center for Health Sciences campus, 2 colleges at the University of Oklahoma Health Sciences Center in Oklahoma City, 1 college at the University of Oklahoma Norman campus, and an independent research institute, the Oklahoma Medical Research Foundation in Oklahoma City.

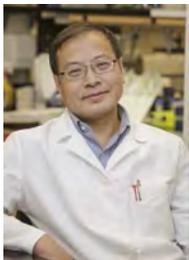
We are unified by a commitment to excellence in research and training on respiratory infectious diseases. Our scientists and leadership cultivate excellence through deliberate faculty mentorship, robust interdisciplinary collaboration, innovative research, and a dynamic bench-to-bedside-to-marketplace approach. Our investigators benefit from OCRID's scientific and technical expertise, core facility support, and collaborative environment fostered through seminar series, work-in-progress meetings, journal club meetings and this annual retreat. Under the guidance of the distinguished scientists who serve on our Steering Committee, Internal Advisory Committee and External Advisory Committee, OCRID is developing a reputation as a regional leader in respiratory infectious disease research. We are excited about what we are doing and we are pleased to share our progress with you.

Lin Liu, Ph.D.  
Program Director

Jordan Metcalf, M.D.  
Co-Program Director

Richard Eberle, Ph.D.  
Co-Program Director

Don Capra, M.D.  
External Consultant





# Table of Contents

Keynote Speakers

~

Advisory Boards

~

Retreat Program

~

Abstracts

~

List of Participants



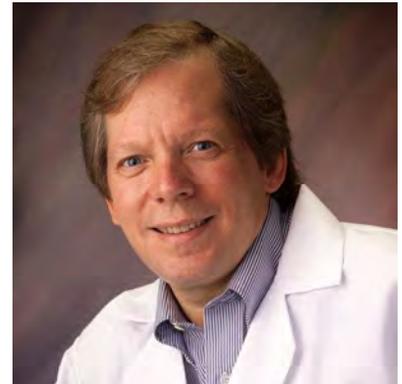
## **Sadis Matalon, Ph.D., Dr. Sc. (Honorary)**

Distinguished Professor & Alice McNeal Endowed Chair, Department of Anesthesiology; Vice Chair for Research, Department of Anesthesiology; Director, Pulmonary Injury and Repair Center, School of Medicine, University of Alabama at Birmingham



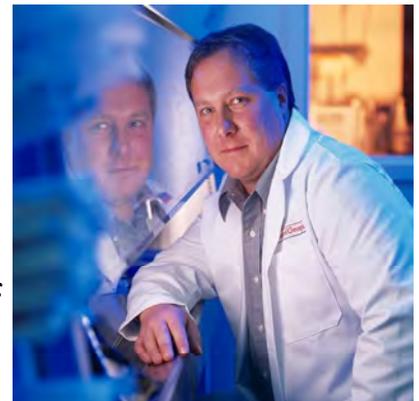
## **Jay K. Kolls, M.D.**

Director, Richard King Mellon Foundation Institute for Pediatric Research; Professor of Pediatrics and Immunology; Vice Chair for Translational Research, School of Medicine, University of Pittsburgh



## **Ralph A. Tripp, Ph.D.**

Professor GRA Eminent Scholar, Georgia Research Alliance; Chair of Animal Health Vaccine Development, College of Veterinary Medicine, University of Georgia





## **Steering Committee**

### **Gillian Air, Ph.D.**

George Lynn Cross Research Professor and Vice Chair, Department of Biochemistry and Molecular Biology, OUHSC

### **Mark Coggeshall, Ph.D.**

Member, Immunobiology and Cancer Research Program; Robert S. Kerr, Jr. Endowed Chair in Cancer Research, OMRF and Adjunct Professor, Department of Microbiology and Immunology, OUHSC

### **Richard Eberle, Ph.D.**

Professor, Department of Pathobiology, CVHS, OSU

### **Myron Hinsdale, Ph.D.**

Associate Professor, Physiological Sciences, CVHS, OSU

### **Lin Liu, Ph.D.**

Regents Professor, Lundberg-Kienlen Professor in Biomedical Research, Director, Oklahoma Center for Respiratory & Infectious Diseases, Department of Physiological Sciences, Center for Veterinary Health Sciences, OSU

### **Pamela Lloyd, Ph.D.**

Assistant Professor, Department of Physiological Sciences; CVHS, OSU

### **Jordan Metcalf, M.D.**

Professor, Division of Pulmonary and Critical Care, Department of Internal Medicine, College of Medicine, OUHSC

### **Wendy Picking, Ph.D.**

Associate Professor, Department of Microbiology and Molecular Genetics, College of Arts and Sciences, OSU

### **Jerry Ritchey, DVM, Ph.D., Diplomate, ACVP**

Professor, Pathobiology, CVHS, OSU

### **Robert Welliver, Sr., M.D.**

Professor, Hobbs-Recknagel Chair in Pediatrics & Chief, Section of Infectious Diseases, Department of Pediatrics, OUHSC



## External Advisory Committee

### Adolfo Garcia-Sastre, Ph.D.

Director, Global Health & Emerging Pathogens Institute; Fischberg Chair & Professor, Infectious Diseases, Mount Sinai School of Medicine

### Jay K. Kolls, M.D.

Director, Richard King Mellon Foundation Institute for Pediatric Research; Professor of Pediatrics and Immunology; Vice Chair for Translational Research, School of Medicine, University of Pittsburgh

### Sadis Matalon, Ph.D., Dr.Sc. (Hon)

Distinguished Professor & Alice McNeal Endowed Chair, Department of Anesthesiology; Vice Chair for Research, Department of Anesthesiology; Director, Pulmonary Injury and Repair Center, School of Medicine, University of Alabama at Birmingham

### Antonios G. Mikos, Ph.D.

Louis Calder Professor, Bioengineering, & Chemical and Biomolecular Engineering; Director, Cox Laboratory of Biomedical Engineering; Director, Center for Excellence in Tissue Engineering, Rice University

### Ralph A. Tripp, Ph.D.

Professor GRA Eminent Scholar, Georgia Research Alliance; Chair of Animal Health Vaccine Development, College of Veterinary Medicine, University of Georgia

## Internal Advisory Committee

### Jerry Malayer, Ph.D.

Professor and Associate Dean for Research, CVHS, OSU; Director, OK EPSCoR

### Robert McCaffree, M.D.

Professor, Division of Pulmonary and Critical Care, OUHSC  
Chief of Staff, VA Medical Center and Associate Dean, Veterans' Affairs, College of Medicine, OUHSC

### Anne Pereira, Ph.D.

Professor and Associate Dean of Research, College of Pharmacy, OUHSC

### William Picking, Ph.D.

Professor and Head, Dept of Microbiology and Mol. Genetics, College of Arts and Sciences, OSU

### Carey Pope, Ph.D.

Regents Professor, Sitlington Chair, Dept of Physiological Sciences, CVHS, OSU



Tuesday, April 22, 2014

\*\*All events will occur in Jones Seminar Room of ConocoPhillips Alumni Center unless otherwise stated\*\*

- 7:00 AM - 7:45 AM      Breakfast  
*\*Click Hall, ConocoPhillips Alumni Center*
- 7:00 AM – 8:00 AM      Poster Setup  
*\*Click Hall, ConocoPhillips Alumni Center*
- 8:00 AM - 8:20 AM      OSU Welcome –**Sheryl Tucker, Ph.D.**, OSU Interim Vice President for Research & Technology Transfer  
  
Program Director’s Report – **Lin Liu, Ph.D.**, Physiological Sciences, Center for Veterinary Health Sciences, Oklahoma State University

**Session I (Session Chair, Lin Liu, Ph.D. Oklahoma State University)**

- 8:20 AM – 9:00 AM      Keynote Address # 1  
  
**Sadis Matalon, Ph.D, Dr. Sc.** – Distinguished Professor, Alice McNeal Endowed Chair, and Vice Chairman for Research, Department of Anesthesiology, Director, Pulmonary Injury and Repair Center, School of Medicine, University of Alabama at Birmingham  
  
*“Mechanisms and modifications of lung ion channel function by Influenza M2 protein”*
- 9:00 AM – 9:30 AM      COBRE Project 1 Presentation  
  
**Tom Oomens, Ph.D.** – Veterinary Pathobiology, Center for Veterinary Health Sciences, Oklahoma State University  
  
*“Development of an RSV Vaccine by Molecular Manipulation of the Viral Matrix Protein”*
- 9:30 AM - 10:00 AM      COBRE Project 2 Presentation  
  
**Heather Fahlenkamp, Ph.D.** – Chemical Engineering, College of Engineering, Architecture & Technology, Oklahoma State University  
  
*“A Novel Tissue-equivalent Respiratory Model to Study Airway Reactivity to Infectious Agents”*
- 10:00 AM – 10:20 AM      Coffee Break  
  
*\*Click Hall, ConocoPhillips Alumni Center*



Session II (Session Chair, Jordan Metcalf, M.D., University of Oklahoma Health Sciences Center)

10:20 AM – 11:00 AM

Keynote Address # 2

**Jay K. Kolls, M.D.** – Director, Richard King Mellon Foundation Institute for Pediatric Research, Professor of Pediatrics and Immunology, Vice Chair for Translational Research, University of Pittsburgh School of Medicine

*“Th17 Cytokines and Mucosal Immunity”*

11:00 AM – 11:30 AM

COBRE Project 3 Presentation

**Shanjana Awasthi, Ph.D.** – Pharmaceutical Sciences, College of Pharmacy, University of Oklahoma Health Sciences Center

*“Control of Lung Inflammation by a TLR4-interacting SP-A-derived Peptide”*

11:30 AM – 12:00 PM

COBRE Project 4 Presentation

**Teluguakula Narasaraju, Ph.D.** – Physiological Sciences, Center for Veterinary Health Sciences, Oklahoma State University

*“Neutrophil-mediated Acute Lung Injury in Influenza Virus Pneumonia”*

12:00 PM - 1:00 PM

Lunch (Reserved table for EAC and Dr. Jean Sander, Dean, CVHS, OSU, Dr. Jerry Malayer, Associate Dean for Research, CVHS, OSU, and Dr. Anne Pereira, Associate Dean for Research, COP, OUHSC, Dr. Lin Liu)

*\*Click Hall, ConocoPhillips Alumni Center*

1:00 PM – 1:20 PM

Group Photo

*\*Courtyard (weather-permitting), ConocoPhillips Alumni Center*

Session III (Session Chair, Myron Hinsdale, Ph.D., DVM, Oklahoma State University)

1:20 PM – 2:00 PM

Keynote Address # 3

**Ralph A. Tripp, Ph.D.** - Professor GRA Eminent Scholar Georgia Research Alliance Chair of Animal Health Vaccine Development, University of Georgia College of Veterinary Medicine

*“Disease Intervention Strategies for Respiratory Virus Infection”*

2:00 PM – 2:45 PM

Core Presentations

2:00 to 2:15 – Animal Model Core

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



2:00 PM – 2:45 PM

Core Presentations (continued)

2:15 to 2:30 – Immunopathology Core

**Jerry Ritchey, DVM, Ph.D.** – Veterinary Pathobiology, Center for Veterinary Health Sciences, Oklahoma State University

2:30 to 2:45 – Molecular Biology Core

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

2:45 PM – 3:45 PM

Pilot Project Presentations

2:45 to 3:00 – **Valentin Rybenkov, Ph.D.** – Chemistry & Biochemistry, College of Arts & Sciences, University of Oklahoma

*“Validation of bacterial condensins as drug targets”*

3:00 to 3:15 – **Wouter Hoff, Ph.D.** and **Marianna Patrauchan, Ph.D.**

Microbiology and Molecular Genetics, College of Arts & Sciences, Oklahoma State University

*“Photoreceptors as a novel class of virulence factors in opportunistic pathogens”*

3:15 to 3:30 – **Gilbert John, Ph.D.** – Microbiology & Molecular Genetics,

College of Arts & Sciences, Oklahoma State University

*“Azoreductase characterization of Pseudomonas aeruginosa strain FRD1, a cystic fibrosis isolate”*

3:30 to 3:45 – **Kenneth Miller, Ph.D.** – Anatomy & Cell Biology,

Oklahoma State University Center for Health Sciences

*“The role of glutamate in the initiation and maintenance of pleurisy”*

3:45 PM – 5:00 PM

Poster Presentations & Closing Reception

*\*Click Hall, ConocoPhillips Alumni Center*



Name	Abstract Title
Anderson, Michael	Glutamatergic sensory innervation of the rat parietal and visceral pleura
Behar, Amanda	<i>Chlamydia trachomatis</i> host-cell egress is dependent on myosin phosphatase and Src family kinases
Das, Subhas	Effect of glutamate on carrageenan-induced acute pleurisy in rat
Gallaher, Brandi	<i>Coxiella burnetii</i> Driven Modulation of Host Cell NF- $\kappa$ B Activation During Infection
Ghousifam, Neda	Using a 3D Vascular Tissue Model to Study Inflammatory Cell Responses
Guo, Yujie	Platelet-derived Wnt antagonist Dickkopf-1 is implicated in ICAM-1/VCAM-1-mediated neutrophilic acute pulmonary inflammation
Guragain, Manita	Calcium induced two-component regulatory system in <i>Pseudomonas aeruginosa</i>
Harrison, Kelly	Evaluation of <i>Salmonella</i> Type III Secretion System Proteins as Vaccine Candidates in Murine, Bovine and Swine Models
Huang, Chaoqun	Interaction of LncRNAs and microRNAs in the pathogenesis of Idiopathic Pulmonary Fibrosis
Laley, Christopher	Yeast two-hybrid analysis of <i>Chlamydia trachomatis</i> inclusion membrane proteins
Lotlikar, Shalaka	Physiological characterization of carbonic anhydrases (CAs) to elucidate molecular mechanism of calcification in <i>Pseudomonas aeruginosa</i>
Martinez-Becerra, Francisco	Characterization of a Novel Fusion Protein as a Vaccine Against Shigellosis



Name	Abstract Title
More, Sunil	The effect of Wnt/ $\beta$ -catenin signaling on influenza A virus replication
Morrison, Jessica	Physiology of <i>Clostridium perfringens</i> in Response to Azo Dye Exposure
Mueller, Nathan	Role of extracellular histones in acute lung injury during influenza pneumonia
Pascual, Elizabeth	Recoverable Microbial Diversity from Cystic Fibrosis Sputa
Ramani, Vijay	TLR4-interacting SPA4 peptide induces localization of bacterial particles in acidic compartments for lysis but inhibits cytokine response
Rice, Shelby	Isolation and Expression of Azoreductase from <i>Pseudomonas aeruginosa</i> strain FRD1
Singh, Bhupinder	Host defense activity of SPA4 Peptide against <i>Pseudomonas aeruginosa</i>
Sivasami, Pulavendran	Molecular Understanding of Proteoglycans and Adult Stem Cell Niches
Tang, Shiyun	Modeling seasonal dynamics and spatial pattern of seasonal influenza
Zhai, Bo	Mesenchymal Stem Cell Expressed VEGF-E Protects Pulmonary Endothelial Cells from Cigarette Smoke Toxicity
Zhang, Li	MicroRNAs Enhance the Differentiation of Mouse Induced Pluripotent Stem Cells into Alveolar Type II Cells
Zhang, Zijia	Activation of glutamate metabolism in rat thoracic dorsal root ganglion in rat <i>mycobacterium tuberculosis</i> induced pleurisy



<u>Last Name</u>	<u>First Name</u>	<u>University</u>	<u>Email</u>
Air	Gillian	OUHSC	gillian-air@ouhsc.edu
Anderson	Michael	OSU	michael.b.anderson@okstate.edu
Ashar	Harshini	OSU	harshini.ashar@okstate.edu
Awasthi	Shanjana	OUHSC	shanjana-awasthi@ouhsc.edu
Baviskar	Prady	OSU	prady.baviskar@okstate.edu
Black	Darla	OSU	darla.black@okstate.edu
Breshears	Melanie	OSU	melanie.breshears@okstate.edu
Cheng	Qi	OSU	qi.cheng@okstate.edu
Coggeshall	Mark	OMRF	mark-coggeshall@omrf.org
Curtis	Amanda	OSU	amanda.curtis@okstate.edu
Das	Subhas	OSU-CHS	subhas.das@okstate.edu
Deng	Zhuo	OSU	zhuo.deng@okstate.edu
Eberle	R	OSU	r.eberle@okstate.edu
Fahlenkamp	Heather	OSU	heather.fahlenkamp@okstate.edu
Finley	Ian	OSU	ianfinley89@gmail.com
Ghousifam	Neda	OSU	neda.ghousifam@okstate.edu
Gou	Xuxu	OSU	xuxu.gou@okstate.edu
Guo	Yujie	OSU	yujie.guo@okstate.edu
Guragain	Manita	OSU	manita.guragain@okstate.edu
Hanif	Shumaila	OUHSC	shumaila-hanif@ouhsc.edu
Harrison	Kelly	OSU	hkellys@okstate.edu
Hartson	Steve	OSU	hartson.steve@okstate.edu
Herrera	Viridiana	OU	viridiana@ou.edu
Hinsdale	Myron	OSU	myron.hinsdale@okstate.edu
Huang	Chaoqun	OSU	chaoqh@okstate.edu
Jiang	Weiyu	OSU	shannon.jiang@okstate.edu
Kapil	Sanjay	OSU	sanjay.kapil@okstate.edu
King	Michelle	OSU	mwaner@okstate.edu
Kolls	Jay	Univ. of Pittsburgh	jay.kolls@chp.edu
Kumar	Gaurav	OUHSC	gaurav-kumar@ouhsc.edu
Laley	Christopher	OSU	claley@okstate.edu
Lameira	Elsa	OSU	elsa.lameira@okstate.edu
Liu	Lin	OSU	lin.liu@okstate.edu
Lloyd	Pamela	OSU	pamela.lloyd@okstate.edu
Lotlikar	Shalaka	OSU	shalaka.lotlikar@okstate.edu
Lutter	Erika	OSU	erika.lutter@okstate.edu
Malayer	Jerry	OSU	jerry.malayer@okstate.edu
Martinez	Francisco	OSU	fjmarti@okstate.edu
Matalon	Sadis	UAB	sadis@uab.edu
Meshram	Chetan	OSU	cmeshram@okstate.edu
Metcalf	Jordan	OUHSC	jordan-Metcalf@ouhsc.edu



<u>Last Name</u>	<u>First Name</u>	<u>University</u>	<u>Email</u>
Miller	Kenneth	OSU-CHS	kenneth.miller@okstate.edu
More	Sunil	OSU	sunil.more@okstate.edu
Morrison	Jessica	OSU	jessica.morrison@okstate.edu
Mueller	Nathan	OSU	nate.mueller@okstate.edu
Mukherjee	Sanjay	OSU	sanjaym@okstate.edu
Nguyen	Hoang	OUHSC	hoang-v-nguyen@ouhsc.edu
Oomens	Tom	OSU	oomens@okstate.edu
Pascual	Elizabeth	OSU	elizabeth.pascual@okstate.edu
Patrauchan	Marianna	OSU	m.patrauchan@okstate.edu
Pereira	Anne	OUHSC	anne-pereira@ouhsc.edu
Pope	Carey	OSU	carey.pope@okstate.edu
Pulavendran	Sivasami	OSU	pulav28@gmail.com
Ramani	Vijay	OUHSC	vijay-ramani@ouhsc.edu
Ranjan	Ashish	OSU	ashish.ranjan@okstate.edu
Ren	Jie	OSU	renj@okstate.edu
Rice	Shelby	OSU	shelby.samrice@gmail.com
Richards	Chris	OSU	ricch@okstate.edu
Ritchey	Jerry	OSU	jerry.ritchey@okstate.edu
Rybenkov	Valentin	OU	valya@ou.edu
Sander	Jean	OSU	jean.sander@okstate.edu
Senavirathna	Lakmini	OSU	lakmini.senavirathna@okstate.edu
Shaw	Edward	OSU	ed.shaw@okstate.edu
Singh	Bhupinder	OUHSC	bhupinder-singh@ouhsc.edu
Sunkara	Lakshmi	OSU	sltulasi@gmail.com
Teluguakula	Narasaraju	OSU	narasa@okstate.edu
Tripp	Ralph	Univ. of Georgia	ratripp@uga.edu
Tucker	Sheryl	OSU	sheryl.tucker@okstate.edu
Weidman	Ruth	OSU	ruth.weidman@okstate.edu
Wieneke	Xuwen	OSU	ch3ch2coch2ch3@gmail.com
Wilson	Blake	OSU	the.blake.wilson@okstate.edu
Yang	Ye	OSU	ye.yang11@okstate.edu
Zhai	Bo	OSU	bo.zhai@okstate.edu
Zhang	Glenn	OSU	zguolon@okstate.edu
Zhang	Zijia	OSU	zijia.zhang@okstate.edu
Zhang	Li	OSU	zhli@okstate.edu
Zhao	Hang	OU	hang.zhao-1@ou.edu