

2009-2010
Summary of Activities
USA Center for Lung Biology

General Operations

The CLB's mission is to provide state-of-the-art scientific development in lung biology that advances the understanding of human health and disease, to improve patient care, and to serve as the foundation for outstanding graduate, post-graduate, and fellowship training. More than 30 faculty members from various departments within the College of Medicine are actively participating in a strong collaborative research environment, a research seminar series and journal club, and graduate, postdoctoral and fellowship training.

The CLB launched its inaugural biannual Newsletter in September of 2009. Two issues, Fall and Spring, were distributed to our academic colleagues throughout the country as a way to illustrate exciting research and academic opportunities in the Center. Our next issue will be released in the Fall of 2010.

Our administrative office is located in the Medical Sciences Building in Room 3340 on the main University campus. Ms. Jennifer Collins and Ms. Charlene Jordan serve as support staff for the CLB and are responsible for clerical duties for the administrative office and research laboratories.

Detailed information about the CLB is available with a click on our homepage (<http://www.usouthal.edu/clb>). The web page is interactive and contains a variety of information including faculty and student bibliographies, recent publications, and information regarding scientific and training programs. Our annual report is available through Ms. Charlene Jordan (414-8045) at the CLB office.

Research Activities

The CLB was well represented at national and international scientific meetings with a number of faculty, postdoctoral fellows, and graduate students presenting their work at multiple forums, including the American Heart Association, Federation of American Societies for Experimental Biology, American Physiology Society, and the International American Thoracic Society.

The CLB hosted several seminars during the past year. Our first guest, Dr. James Klinger, Associate Professor of Medicine at Brown University presented *The Role of ANP in Pulmonary Permeability* at our Distinguished Scientist Seminar series. Dr. Klinger also gave a Medical Grand Rounds presentation at USAMC entitled *The Importance of Right Ventricular Function in Acute and Chronic Pulmonary Hypertension*. Our second guest, Dr. Scott Sinclair, Associate Professor Division of Pulmonary, Critical Care and Sleep Medicine at the University of Tennessee Health Science Center, presented Medical Grand Rounds entitled *Non-*

Pharmacological Interventions in Acute Lung Injury: beyond low tidal volumes. Our Critical Care Conference series in conjunction with the Pulmonary Division hosted three speakers. This conference focuses on translational research and acute lung injury, and is held monthly on Fridays at 2:15 pm. Dr. Sonia Flores, Professor of Medicine at University of Colorado Health Sciences Center presented *HIV-related Pulmonary Hypertension: From Monkeys to Humans to the Bench*. Dr. Scott Sinclair, Associate Professor Division of Pulmonary, Critical Care and Sleep Medicine presented *The Combined Effects of Hyperoxia and Mechanical Stretch on Ventilator-induced Lung Injury*. Dr. David Cornfield, Director-Center for Excellence in Pulmonary Biology Professor, Pediatrics - Pulmonary Medicine Stanford School of Medicine presented *Developmental Regulation of Oxygen Sensing in the Lung*.

Extramural Funding

In the past year, CLB principal investigators submitted 20 grant applications to the American Heart Association (AHA), National Institutes of Health (NIH), and other foundations/industries. To date, five of these applications were awarded generating over \$2.4 million in new revenue over the next five years. This represents a 25% success rate in grant submission for this fiscal year.

The Center received two awards from NIH. The first was a competitive renewal received by Dr. Troy Stevens. The second was an instrumentation grant received by Dr. Thomas Rich to purchase a confocal microscope for the new Bio Imaging Facility in the COM. Dr. Natalie Bauer received a Research Scholars Program award in Pulmonary Arterial Hypertension from Gilead Sciences. Dr. Thomas Rich received a Collaborative Research Trials award through GlaxoSmithKline's Respiratory Medicine Development Center. Glenda Parra-Bonilla, a graduate student in Dr. Troy Stevens laboratory, received a pre-doctoral fellowship from AHA, Greater Southeast Affiliate.

Recruitment Activities

An objective of the CLB is to enhance clinical, translational, and basic research in the pulmonary sciences. As part of this initiative, the Center is recruiting research scientists at all academic ranks and across disciplines. The CLB welcomed two new recruits to the program this year. Dr. Sarah Sayner was appointed Assistant Professor in the Department of Cell Biology and Neuroscience, and Dr. Donna Cioffi was appointed Assistant Professor in the Department of Biochemistry and Molecular Biology. Drs. Sayner and Cioffi possess expertise in lung endothelial cell biology, with research efforts that focus on the cellular basis of acute lung injury.

Education

The CLB provides a vibrant collaborative research environment forming an outstanding framework for training in lung biology and related areas, and offers training opportunities for students and fellows at any academic stage. This past summer, the CLB accepted seven students for the Summer Undergraduate Research Fellowship (SURF) program. Students participating in

the program and sponsors respectively were John Boni, University of South Alabama (Drs. Diego Alvarez, Silas Leavesley, and Thomas Rich), Kandie Collier, University of South Alabama (Dr. Eugene Cioffi), Kristin Grant, North Carolina State University (Dr. Thomas Rich), Sujata Mulekar (Dr. Abu-Bakr Al-Mehdi), Jaclyn Nickels (Dr. Troy Stevens), Matthew Robson, Alabama School of Math and Science (Drs. Troy Stevens, and Songwei Wu), and Trevor Stevens, Spanish Fort High School (Dr. Songwei Wu).

CLB faculty played an active role in the 36th Annual Medical Student Research Day sponsoring eleven summer medical students. Drs. Sarah Gebb (Chair), Karen Fagan, Susan LeDoux, Sarah Sayner and Mary Townsley served on the Student Research Committee. Students participating in the program and sponsors respectively were LaShaundra Murphy (Dr. William Gerthoffer), Libby Wilson (Drs. Sarah Gebb and John Benjamin), Ryan Kunstadt (Dr. Sarah Sayner), Sara Long (Dr. Brian Fouty), Brian Dilworth (Dr. Stephen Ballard), Jason Largen (Dr. Richard Honkanen), Robert Kobelja (Dr. Sachin Gupta), Sarah Kelley (Dr. James Parker) James Towner (Dr. Glenn Wilson) Nicholas Bates (Drs. John Benjamin and Joseph Brewer) and James Gallé (Dr. Thomas Lincoln). In addition, several students participating in the UCUR and Healthy Communities summer programs were sponsored by CLB members: Maya Battles (Dr. William Gerthoffer), Samantha Stocker (Drs. Silas Leavesley, Thomas Rich, and Diego Alvarez), Alexandria Broadnax (Dr. Troy Stevens and Glenda Parra-Bonilla), Leia Brown (Drs. Eugene Cioffi and Donna Cioffi), Alison Johnson (Dr. Diego Alvarez), Quinton Miles (Dr. Mary Townsley), April Haven (Dr. Mary Townsley).

Student training in CLB is interdisciplinary. As part of this concept CLB faculty, clinical fellows, post-docs, graduate students and technicians participate in weekly seminars. CLB holds a research-in-progress seminar on Tuesdays (11-12:00 pm). Papers are reviewed and utilized to transition into the presenter's own area of investigation. Up to date research results and future directions are discussed. CLB co-sponsors a research seminar series with the Division of Pulmonary and Critical Care Medicine on Fridays (1:30-2:30 pm). Presentations rotate between Case Conference, Critical Care Conference, Basic Science Reports, and Research Conference. Research Conference is held in the Pharmacology Conference Room (MSB 3360) whereas other Conferences are held in the Eichold Room at the USA Medical Center.

Three students received their Ph.D. this year. Salina Gairhe defended her dissertation on September 23, 2010. Dr. Ivan F. McMurtry served as the major professor on her dissertation entitled *Myoendothelial Gap Junctional Signaling Regulates Pulmonary Arterial Smooth Muscle Phenotype*. Kevin Lowe defended his dissertation on May 25, 2010. Dr. Troy Stevens served as the major professor on his dissertation entitled *Analysis of the Pathologic Impact of Site Specific Accumulations of Extravascular Pulmonary Fluid*. Ryan J. Viator received defended his dissertation on April 21, 2010. Dr. Brian Fouty served as the major professor on his dissertation entitled *Oxygen Tension Controls Glucose Uptake and Metabolism in Endothelial Cells*.

Several graduate students in the CLB training program received special recognition. Glenda Parra-Bonilla received Predoctoral Fellowship awards from the American Heart Association, Southeast Affiliate. Glenda's project is entitled *Essential Role of Lactate Dehydrogenase A*

(LDHA) in Lung Neo-angiogenesis and is sponsored by Dr. Troy Stevens, Professor of Pharmacology and Internal Medicine, Director, Center for Lung Biology. Salina Gairhe received a travel award to attend the International American Thoracic Society conference in New Orleans. Cristhiaan Ochoa received a travel scholarship to attend the Gordon Research Conference on Endothelial Cell Phenotypes in Health and Disease in Biddeford, ME.

The NIH-funded T32 training grant on *Cell Signaling and Lung Pathobiology*, is directed by Dr. Mary Townsley. The T32 supports 6 pre-doctoral trainees per year, along with 4 short-term summer research trainees. Summer trainees are drawn from the COM medical students and engineering master's students who apply for summer research positions in the CLB. A summary of outcomes for doctoral trainees in the CLB is noted in the table below.

Summary of Outcomes in the PhD program: 2004-present	T32 Trainees	Trainees with CLB Faculty
Total trainees enrolled	15	43
US citizen/permanent resident	15	34
Under-represented minorities	6	8
Individual extramural fellowships	2	14
Trainees completing PhD	3	17
PhDs active in academia and/or research careers	3	16

Art in Science

PERCIPIO™ The Art in Science Program was developed by the CLB to increase community awareness about ongoing biomedical research performed at USA. The Art in Science program provides an opportunity for research scientists to present aesthetic aspects of their data to the public. The primary purpose of the program is best defined by its title, PERCIPIO, which means "to learn through the senses". Percipio has been busy with its community outreach component of the Art in Science program. In October, we participated in Med School Café, a lunch and learn lecture series sponsored by the USA Physicians Group. The Mobile Museum of Art hosted the fall series and The Palette Café located in the museum catered the event. Using images from our Art in Science Gallery, Dr. Troy Stevens, Professor of Pharmacology and Medicine, and Director of the CLB, presented a lecture on how art interfaces with science and medicine, specifically relating to lung diseases. A collection of framed images used in the presentation were on display. We received positive feedback from the well attended (approximately 100 people) lecture.

Downtown Mobile comes alive the second Friday of each month with the LoDa Artwalk celebrated in the Cathedral Square arts district. Numerous venues, including art galleries, studios, and specialty shops hold an open house inviting the public in for a personal glimpse. Brad Robertson of the Robertson Gallery graciously hosted a collection of our framed images

during October's Artwalk. Artists represented during Artwalk were Abu-Bakr Al-Mehdi, Kathy Bonness, Clayton Campbell, Judy Creighton, and Judy King.

Percipio had a busy schedule this spring with in-classroom art in science presentations on the respiratory system for three local middle schools. Dr. Donna Cioffi, Assistant Professor of Biochemistry and Molecular Biology, presented two art in science seminars at local middle schools. The first at Scarborough Middle School for Ms. Natasha Cox's 7th grade science classes on February 26, 2010. The second for Ms. Sheela Bhat at Chastang Middle School March 18, 2010 who was interested in using our art in science presentation as an incentive for her life sciences students. The third presentation was given by Dr. Natalie Bauer, Assistant Professor of Pharmacology, for Ms. Natasha Laxton's 7th grade science classes at Grand Bay Middle School on March 19, 2010.