

Billiar Lab News

University of Pittsburgh

Winter 2014

Volume 21

2014 Simmons' Surgery Research Day Call for Abstracts

Who?

Any surgical investigator in training, including fellows, residents and medical students may apply. Abstracts will be selected for presentation at the 2014 Department of Surgery Research Day, to be held on Wednesday, May 14, 2014. Work may be clinical or basic science and may cover any area of surgical research. Individuals may submit more than one abstract, but each author may only have one oral presentation. Awards will be given for top three (3) oral and top three (3) poster presentations.

What?

A 250-maximum word abstract that presents a concise summary of research completed and in progress. This research may have been presented previously at a local or national meeting, but it

may not have been previously published or in press. The title must be brief and informative. The body of the abstract must include an Introduction, Methods, Results and Conclusions as separate paragraphs. A one-page table may be submitted; the table does not count toward the 250 maximum word count. No figures are to be included.

How?

Submission of abstracts is by email only. Please note that the name of the person submitting the abstract, the PI supporting the work, as well as the Departmental laboratory they are from, must be noted on the abstract. Please attach the abstract as a word document and send it to shoemakergl@upmc.edu.

When?

Important Dates

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Simmons Research

Tu 8:00am & Th 8:30am F-1275 PUH

- Mar 11 Brian Boone
- Mar 13 James A. Lederer, PhD – Invited Speaker
- Mar 20 Peng Lu

Billiar Lab Meeting

Th 12:15pm F-1275 PUH

- Mar 5 Shuhua Chen
- Mar 12 Meihong Deng
- Mar 27 Hui Zhou (Journal Club)

DAMP's/Danger Signals

Th 10:00am F-1275 PUH

- March 20
- May 15

Trauma/Sepsis Model

Tu 9:30am F-1275 PUH

- May 20
- June 17

Immunology Seminar Series

Scaife Hall, Auditorium 5

Thurs 12:00-1:00pm

- March 6
- March 13
- March 20
- March 27

For a full list of events, please go to General and Vascular Surgery Labs website's [calendar](#).

Deadline for abstract submission is 5 pm on Sunday, April 1, 2014. Decisions regarding accepted oral and poster presentations will be circulated by mid-April.

Questions?

Please refer questions to Gail Shoemaker at 412-647-1749 or shoemakergl@upmc.edu

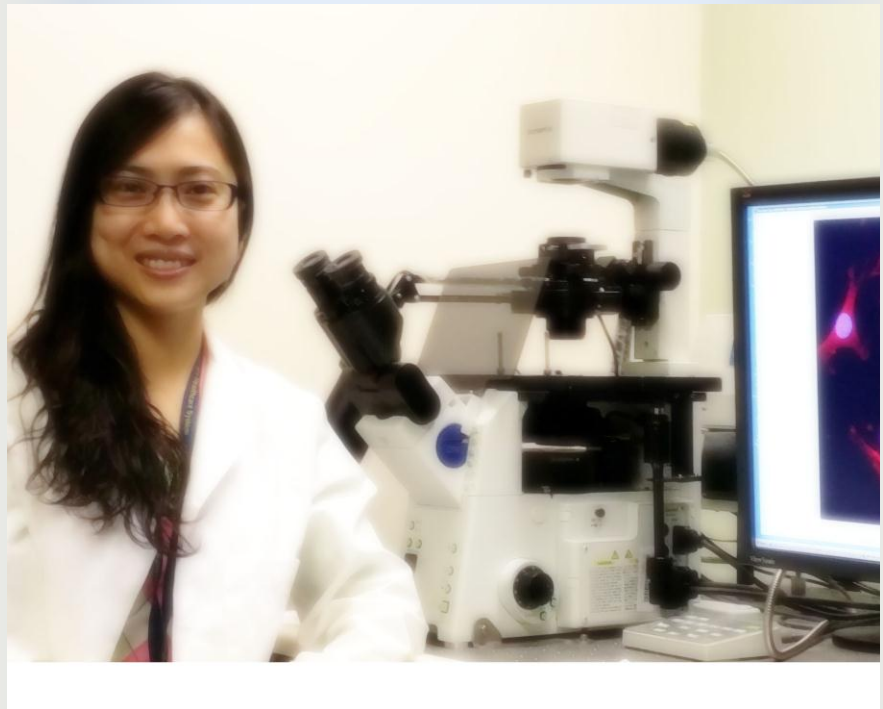
Abstract preparation suggestions

- Title
 - Provide clear and accurate information for finding, indexing, and scanning
- Abstract
 - Summarizes all key information
- Introduction -*Why did you start?*
 - Background knowledge
 - Describe the nature and severity of the specific problem
 - Describe the specific aim
 - What is the hypothesis?
- Methods - *What did you do?*
 - Ethical issues (IRB, etc.)
 - Describe the intervention and its component parts in sufficient detail that others could reproduce it (describe instruments and procedures)
 - Clinical: Identify study design (observational, experimental, qualitative, quantitative)
 - Provide details of

Faculty Highlight – Dandan Chen

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I was born and grew up in a small town by the coast in southern China, where the largest seashore shelterbelt forest in China is located. My career goal is to become a physician scientist who can translate basic research to evidence-based practice and improve patient care. After I obtained my medical degree, I started my residency training in Internal Medicine in the First Affiliated Hospital of Sun Yat-Sen University, and then continued to pursue my PhD in cardiovascular medicine thereafter. As an exchange PhD candidate, I joined Michigan State University in 2005 to carry on my dissertation project pertaining to endothelial progenitor cell (EPC) therapies in hypertension. My discovery demonstrated the significant role of EPC dysfunction in a salt-sensitive hypertension model, which mimics a typical hypertensive subtype in an Angiotensin Converting Enzyme (ACE) inhibitor-resistant African American population. The significance of this research work rendered the awarding of the American Heart Association Postdoctoral Fellowship to me.



In 2008, I moved to the University of Pittsburgh and am currently working in Dr. Alex Chen's lab as an Instructor for the Department of Surgery. One of my research interests is diabetic wound intervention to accelerate refractory wound healing. Meanwhile, I am carrying out an interesting study to investigate the relationship between

New Faces



Please welcome the following new people into our labs:

Billar Lab

Muqing Yang – Visiting Scholar

Xianguang Zhu – Visiting Scholar

Xiqiang Liu – Visiting Scholar

Justin Markel –Res. Tech.

Amy Callear – Breeding Asst.

Chen Lab

Ji-Kuai Chen – Visiting Scholar

Good Luck



We'd like to extend our best wishes and good luck in future endeavors to those individuals who have left or are soon leaving the labs.

Guoping Yang

Jing Sheng

Zhixia Chen

Jia Xu

Yong Xiao

GuoXiang Fu

Beibei Han

Quimei Xu

Lei Dou

Quoqiang Chen

qualitative and quantitative (statistical) methods used to draw inferences from the data

- Statistical analysis and significance is emphasized.
- Results - *What did you find?*
 - Describe the most important points learned from the data
 - Clinical: Present data on changes observed in measures of patient

Lab Updates

Equipment News

In anticipation of the upcoming lab movements, please clean your bench areas and go through your freezer space. With the limited space, any completed lab notebooks should be boxed and sent to storage. These can be retrieved with 24 hours notice, so there shouldn't be any hesitation in keeping them "on hand". Freezer space is also at a premium – especially in Montefiore— as there is no more room in the halls for additional freezers, condense your old samples.

The door to the former dark room (NW639) has finally been installed! The hypoxic chamber is in place and is ready for use.

New Contract Awarded for Office Supplies

outcome (for example, morbidity, mortality, function, patient/staff satisfaction, service utilization, cost, care disparities)

- Clinical: Consider benefits, harms, unexpected results, problems, failures
- Conclusion/Discussion - *What do the findings mean?*
 - Highlight the work's particular strengths

In the spirit of continuous improvement, we are pleased to announce the award to Supra Office Solutions, Inc., as the [platinum-level provider](#) of office supplies for the University of Pittsburgh.

Supra is a full-service contracted supplier that will provide the local sales, delivery and customer support required by University purchasers, and management of a paperless buy-to pay process through the PantherExpress System. Supra's strategic alliance partner, Office Max, Inc., will ensure access to an extensive product selection, including popular name brand and OfficeMax brand products. By leveraging our membership in the 3,000+ member Educational and Institutional (E&I) purchasing cooperative and consolidating

Staff Highlight – Alicia Frank



Alicia has come full circle by returning to western Pennsylvania where she grew up. After attending high school in Ohioville, a small town about 40 minutes north of Pittsburgh, she obtained a B.S. in Animal Sciences from Penn State University. While at Penn State, she worked in a dairy nutrition research lab. Two of the more interesting studies she worked on were the effects of salivary amylase on grain fed calves and the effect of differing forage to concentrate ratios on prepubescent heifers. Needless to say, if you have any questions on the gastric system of a ruminant, Alicia can probably answer them for you!

After graduation, she moved to Boston for 3 years. While in New England, she worked for Massachusetts General Hospital as a research animal technician with a range of duties from rodent husbandry to health monitoring and colony maintenance. She also spent two years as a large animal surgery technician at Children's Hospital in Boston. In this role, she was essentially an anesthesiologist and scrub nurse for the researchers using sheep, pigs, and swine in gastric, cardiac, and orthopedic surgery studies. She then spent some time working as an emergency and intensive care vet tech at a 24 hour emergency and specialty veterinary hospital.



Alicia has worked in the Billiar lab for five years, the first three and a half she was a part of the hemorrhagic shock team and more recently she is the hepatocyte harvest technician and helps with genotyping and can fill in when needed to assist with the weaning of our many mouse

our spending with one supplier, the University has achieved significant savings on our highest demand products.

This new contract is effective **March 3, 2014**.

Important information including answers to frequently asked questions, resources and contact information is available at <http://cfo.pitt.edu/osci>

Messages from DLAR and IACUC

Requirements for CO₂ Euthanasia in Rodents Policies of the [United States Department of Agriculture](#) NIH's [Office of Laboratory Animal Welfare](#), and the University of Pittsburgh's IACUC require that animal euthanasia procedures be consistent with the most recent [American Veterinary Medical Association Guidelines for the Euthanasia of Animals](#) (AVMA Euthanasia Guidelines). The AVMA Euthanasia Guidelines were revised in 2013.

The revised AVMA Euthanasia Guidelines stipulate the following requirements for use of carbon dioxide for euthanasia:

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"May be used only with those species where aversion or distress can be minimized; gradual fill method must be used; must be supplied in a precisely regulated and purified form without contaminants or adulterants, typically from a commercially supplied cylinder or tank; an appropriate pressure-reducing regulator and flow meter or equivalent

equipment must be used."

The AVMA Euthanasia Guidelines also stipulate a fill rate of 10% - 30% of the chamber volume per minute with carbon dioxide.

Equipment and procedures used to perform rodent euthanasia with carbon dioxide in the Division of Laboratory Animal Resources

(DLAR) facilities were standardized in 2013 to ensure consistency with the AVMA Euthanasia Guidelines. However, rodent carbon dioxide euthanasia equipment and procedures in IACUC-approved outside use and overnight housing areas were observed to be inconsistent with the AVMA Euthanasia Guidelines during

Continued from Page 2 (Dandan Chen)

*microRNAs and angiogenesis in aged vascular injury. Some of my research findings were of translational significance, and published in several peer-reviewed professional journals, including *Hypertension* and *J Clin Invest*, *Diabetes*, among others. Additionally, I am also serving as a Project Coordinator of two human studies in Pittsburgh Veteran Affairs Hospital aiming to find potential novel biomarkers for early intervention to vascular injury in hypertension and diabetes which renders me an excellent opportunity to reshape my research scenario from "bench-top to bedside". The intensive research experience in the lab fosters my critical thinking and analytic ability, which will definitely benefit my coming residency training that I'll be starting in July.*

I have a little townhouse at Sheraton Park, just to the south west of Pittsburgh. Both my husband and I are loyal Steelers' fans. I like Troy Polamalu with his iconic hairstyle, of course. During the football season, on Sundays, it is our routine to cook our favorite delicious meals (toasted ducks and steamed lobsters) and enjoy Steelers' games with beer. In addition, we enjoy outdoor activities, travelling all over the country visiting National parks and photography. Our objective is to visit the Alaska National Park is this year. I have also developed a new hobby since I moved to Pitt: following the instructions of my very good swimming teacher "YouTube". I have learned the frog kick and free style from it and make progress gradually.



recent site visits conducted separately by OLAW and the [Association for the Assessment and Accreditation of Laboratory Animal Care](#), International (AAALAC).

Most inconsistencies with the AVMA Euthanasia Guidelines in outside use areas involved the use of an inappropriate euthanasia chamber and/or a failure to regulate the gradual fill rate of CO₂ gas in the euthanasia chamber.

Euthanasia chambers must meet the following criteria:

- Be made of a sanitizable transparent plastic material, such as polycarbonate or polysulfonate.
- Be approximately the same size as a rodent shoebox style cage
- The lid to the euthanasia chamber must be vented at the top to allow the air within the chamber to be displaced by CO₂
- CO₂ must be supplied by a compressed gas cylinder and controlled by an appropriate regulator and flow meter.

Investigators are strongly encouraged to consult with their DLAR facility

Continued from Page 4 (Alicia Frank)

colonies. Alicia knows how to perform most of the animal models that are used by the lab - liver I/R, CLP, HS and PFX, and can run the IVIS. The latest techniques Alicia has learned are Western blots and using the Guava for flow cytometry. In addition to animal models and benchwork, she also compiles the lab newsletter and updates the website.

When she isn't working, Alicia enjoys playing fetch with her Golden Retriever - Honey, reading mystery novels, and quilting. She is also an avid sports fan, following all the Pittsburgh teams and every weekend in the fall you can guarantee she is cheering on the Nittany Lions as the take to gridiron - and life only gets better when she has tickets to watch them play in Happy Valley and she is trying to figure out how she can make it to the game they are playing in Ireland this coming fall!



veterinarian to ensure that equipment and procedures, including the calculated chamber displacement rate, used to perform rodent euthanasia with carbon dioxide in outside use areas are consistent with 2013 AVMA Euthanasia Guidelines.

You may also contact the DLAR (dlar@pitt.edu; 412-648-8950) for assistance in identifying your facility veterinarian.

The [Research Conduct and Compliance Office](#) and IACUC monitor euthanasia practices and equipment during protocol audits, the semi-annual facility

inspection process, and other post-approval monitoring activities. Rodent carbon dioxide euthanasia practices found to be inconsistent with the 2013 AVMA Euthanasia Guidelines will be documented as non-compliance and handled accordingly.

Montefiore Labs Solution:

The ice bucket CO₂ chamber has been removed from NW615MUH and replaced with a stainless steel Euthanex Lid. This lid is similar to the ones found in the EBST vivarium. To be in compliance when using this lid, your animals must be placed in either a mouse cage bottom or rat cage bottom (yellow polysulfone), with the lid placed so that the two ventilation holes are over the box open the valve on the CO₂ tank, observing the air flow making sure it is a “gentle breeze” over the mice – not like they are in a tornado!

Letter from Denise Capozzi

Dear Researchers,

2013 brought a number of regulatory challenges for everyone engaged in research using animal models. New

and evolving interpretations of regulations and guidelines required us to adapt quickly to ensure our continued compliance. The large scale of our animal care and use program places it under intense scrutiny. In just the last six months, our program was reviewed by the USDA, Public Health Service, and AAALAC, International. During these reviews, site visitors examined in detail the operation of our animal care



program, and provided suggestions for improvement. Each review applauded our program and commitment to excellence. It is important to remember that this programmatic excellence is not born in a vacuum; recognition is in order for those who have contributed to our continued success.

First, I would like to thank our IACUC members for their support. The participation of these volunteers in federally

mandated semi-annual reviews is invaluable, as are the countless hours they spend reviewing research protocols and attending committee meetings. Without their commitment and generosity of time, our work would not be possible.

In collaboration with our IACUC, professionals from the Environmental Health and Safety Department are crucial to the success of our program. Thank you, for your efforts in assuring that our most valuable assets, our health and safety, are well protected.

Excellent veterinary care and animal husbandry is the backbone of any quality animal research program. Every day, DLAR team members devote their efforts to ensuring that animals are well cared for and research paradigms are protected. Quality science and animal care go hand in hand, and the DLAR continues to work tirelessly to maintain and improve both. Thank you for your continued dedication.

Along with a dedicated IACUC and attention to health and safety and

exemplary animal care, an animal care program must have strong institutional support and leadership. The University's support of our program is unwavering.

Lastly, I would like to thank you - faculty, students, and staff members who participate in research - for taking time from your

efforts to speak with IACUC members during site reviews. I know that compliance with the complex regulatory requirements is not always easy, particularly in light of stagnant research funding. Despite these stressors, I continue to see success and determination thriving here at the University of Pittsburgh. It is

your work that has helped keep our University in the spotlight as an internationally recognized center of innovation and excellence. You truly are the engine that drives our future.

[Dr. Denise Capozzi](#) and the IACUC Office Staff



Colony Status: As of February 25, 2014

Established Colonies

| | | |
|-----------------------------------|----------------------------------|----------------------|
| iNos KO | C3 KO | NFKB WT |
| Trif ^{LPS-2} Jax #005037 | TLR2 KO | Pf4creTLR4 KO |
| CD14 KO | Caspase1KO | Pf4creHMGB1flox |
| Myd88 KO* | DC TLR4 KO | TLR4 KO x TLR2 KO |
| Myd88 WT* | TLR4 KO/TL9 ^{CpG1/CpG1} | Myd88 flox |
| TLR9 ^{CpG1/CpG1} | Nalp 3 KO | HC Myd88 KO |
| Jα281 ^{-/-} | TLR4 KO/RAGE KO | Lyz cre Myd88 KO |
| HC TLR4 KO | Lyz Cre TLR4 KO | ROSA |
| TLR4 flox | Adipose TLR4KO | TACE flox |
| TLR4 KO (global) | HMGB1 flox | ATF3 KO |
| Het TLR4KO/TLR4flox | HC HMGB1 KO | Cathepsin L KO (N-1) |
| RAGE KO | NFKB luc | Cathepsin L WT (N-1) |

Colonies in Development

| | | |
|---------------------------------|--|---|
| Caspase 11 – Breeding +/- pairs | VEC TLR4 KO – waiting for breeding pairs | HC TACE KO – waiting for breeding pairs |
| Cathepsin L KO – N-4 set up | ROSA Pf4cre HMGB1 KO – set up breeding pairs | iHMGB1 KO – waiting for breeding pairs |

Strains Available from Collaborators

| | | |
|-------------------------|--------------------|---|
| CAV KO (Michael Bauer) | TSP-1 KO (A. Chen) | GDF-15 KO (Yoram Vodovotz) |
| IFNabR KO (M. Bauer) | TSP-2 KO (A. Chen) | iHMGB1 KO (Qingde Wang) – characterization underway |
| IRF-2 KO (David Geller) | CD36 KO (A. Chen) | |
| eNos GCHtg (A. Chen) | hph-1 (A. Chen) | |

Cryopreserved Strains *at Jackons Labs unless otherwise noted

| | | |
|---------|---------------------------|----------------------------------|
| eNos tg | EGR1 KO | TLR-4 KO (Taconic, under Hackam) |
| CD36 KO | IFNabR KO | HMGB1+/- |
| TLR2 KO | TLR-9 (eggs, in house) | |
| AIM2 KO | TLR-4 flox (under Hackam) | |

Stud Colonies

| | | |
|--------------------------|----------------------|---------------------|
| TLR4 KO x CD11c | HMGB1 flox x Pf4 cre | TLR-4 KO x VEC cre |
| TLR4 KO x Albumin Cre | TLR-4 KO x Pf4 cre | TACE flox x Alb cre |
| HMGB1 flox x Albumin Cre | Myd88 flox x Lyz cre | HMGB1 flox x ER cre |
| TLR4 x Fab cre | Myd88 flox x Alb Cre | |
| TLR4 KO x Lyz Cre | HMGB1 flox x ROSA KO | |

If you have any questions regarding the contents of this newsletter, contact Deb Williams (williamsd8@upmc.edu)

If you know of anything exciting or newsworthy going on in the lab that you want to share with others email Alicia Frank (franka@upmc.edu) with the information

For more information, please visit the General and Vascular Surgery Labs website: (<http://www.gensurgerylabs.pitt.edu/>)