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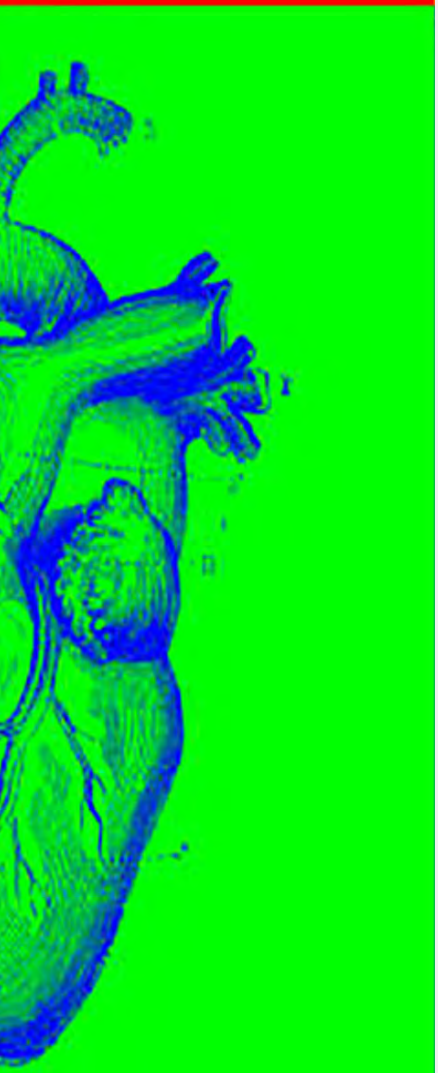

GILL QUARTERLY

SUMMER 2021

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FEATURED
CLINICAL TRIAL

REVERSE-IT: A Phase 3, Multicenter, Open-Label, Single-Arm Study of PB2452 in Ticagrelor-Treated Patients with Uncontrolled Major or Life-Threatening Bleeding or Requiring Urgent Surgery or Invasive Procedure

PI: Ahmed Abdel-Latif, MD, PhD
Sponsor: PhaseBio Pharmaceuticals Inc

Objective: To demonstrate reversal of the antiplatelet effects of ticagrelor with IV infusion of PB2452 and to demonstrate the clinical efficacy of PB2452 by assessment of hemostasis in ticagrelor-treated patients with uncontrolled major or life-threatening bleeding or who are undergoing urgent surgery or invasive procedure in a an open-label, single-cohort study.months, or an elevation in a certain blood test for HF, called BNP or NT-pro-BNP.

For More information contact: Stephanie Morris: stephanie.a.morris@uky.edu
Phone: 859-323-5366

Trial Background: Bentracimab (previously PB2452) has been studied in Phase 1 and Phase 2 clinical trials and has demonstrated the potential to bring life-saving therapeutic benefit through immediate and sustained reversal of the antiplatelet activity of ticagrelor, potentially mitigating concerns regarding bleeding risks associated with the use of antiplatelet drugs. Additionally, in a translational study, bentracimab achieved equivalent reversal of branded ticagrelor and multiple ticagrelor generics. The pivotal Phase 3 clinical study is called REVERSE-IT (Rapid and SustainEd ReVERSal of TicagrElor – Intervention Trial). REVERSE-IT is a multi-center, open-label, prospective single-arm trial designed to study reversal of the antiplatelet effects of ticagrelor with bentracimab in patients who present with uncontrolled major or life-threatening bleeding or who require urgent surgery or invasive procedure. Approximately 200 patients are being targeted to be enrolled from major health centers worldwide. Patients with reported use of ticagrelor within the prior 3 days who require urgent reversal due to uncontrolled major or life-threatening bleeding or because they need ticagrelor reversal will be eligible for enrollment.

As of March 2021, the REVERSE-IT Phase 3 clinical trial had enrolled 60 of the first approximately 100 patients needed to support a Biologics License Application (BLA), nearly all of whom to date have required urgent surgery or an invasive procedure. PhaseBio is attempting to accelerate enrollment of patients with uncontrolled major or life-threatening bleeding, including by working to increase the number of enrolling clinical trial sites in the United States, Canada, and the European Union as it is believed that a broader site footprint will increase the probability of enrolling these patients. The trial is enrolling faster than PhaseBio originally projected, and PhaseBio now expects to complete enrollment of the first 100 patients in mid-2021 and is targeting to submit a BLA for bentracimab in mid-2022, although those timelines could be impacted by the continued scope and duration of the COVID-19 pandemic.

For additional trial information, please visit:
ClinicalTrials.gov

CURRENTLY ENROLLING **CLINICAL TRIALS**

BIO LIBRA - AnaLysIs of Both Sex and Device Specific FactoRs on Outcomes in PAtients with Non-Ischemic Cardiomyopathy

PI: Aaron Hesselson, MD
Coordinator: Ben Rushing 859-323-5259

Objective: This study is designed to evaluate the combined risk of all-cause mortality and treated ventricular tachycardia (VT) or ventricular fibrillation (VF) events by subject sex and by implanted device type. All-cause mortality, VT or VF alone, risk of cardiac death, and sudden cardiac death will be analyzed for the total cohort, as well as by subject sex and by the implanted device type

OPTIMIZER SMART POST - APPROVAL STUDY

PI: Aaron Hesselson, MD
Coordinator: Ben Rushing 859-323-5259

Objective: Post-approval study that evaluates data such as cardiac outcomes, quality of life, mortality, and functionality. Long-term data needed to assess complication rates and potential interactions with other implantable devices in the intended patient population. The post-approval study (PAS) protocol designed to address these concerns in a real-world setting.

BIO-AffectDX- Atrial Fibrillation associated with Heart Failure treated by BIOTRONIK's CRT-DX System

PI: Aaron Hesselson, MD
Coordinator: Ben Rushing 859-323-5259

Objective: To evaluate the percent of all subjects with improvement from baseline in heart failure patients with paroxysmal, persistent, and long-standing persistent AF subtypes implanted with a two-lead BIOTRONIK CRT-DX system.

LEADLESS-II - A safety and effectiveness trial for a leadless pacemaker system

PI: Aaron Hesselson, MD
Coordinator: Jennifer Isaacs 859-323-4738

Objective: To confirm the safety and effectiveness of the Aveir device from implant through 6-weeks in a subject population indicated for a VVI(R) pacemaker.

General Cardiology:

EMPACT-MI – A study to test whether empagliflozin can lower the risk of heart failure and death in people who had a heart attack (myocardial infarction)

PI: John Kotter, MD
Coordinator: Ben Rushing 859-323-5259

Objective: To demonstrate the superiority of empagliflozin 10 mg once daily versus placebo, in addition to standard of care, for the reduction of the composite endpoint of time to first heart failure hospitalization or all-cause mortality in high-risk patients hospitalized for acute MI.

RELIEVE-HF TRIAL: REducing Lung congestIon symptoms using the v-wavE shunt in adVancEd Heart Failure

PI: John Gurley, MD
Coordinator: Stephanie Morris 859-323-5366

Objective: To provide reasonable assurance of safety and effectiveness of the V-Wave Interatrial Shunt System by improving meaningful clinical outcomes in

CLINICAL TRIALS CONTINUED

patients with NYHA functional class II, class III or ambulatory class IV heart failure, irrespective of left ventricular ejection fraction, who at baseline are treated with guideline-directed drug and device therapies.

REVERSE-IT: A Phase 3, Multicenter, Open-Label, Single-Arm Study of PB2452 in Ticagrelor-Treated Patients with Uncontrolled Major or Life-Threatening Bleeding or Requiring Urgent Surgery or Invasive Procedure
PI: Ahmed Abdel- Latif, MD, PhD
Coordinator: Jennifer Isaacs 323-4738

Brief Summary:
The study will demonstrate the reversal of the atiplatelet effects of ticagrelor with IV infusion of PB2452 and the clinical efficacy of PB2452 by assessment of hemostasis in ticagrelor-treated patients with uncontrolled major or life-threatening bleeding or who are undergoing urgent surgery or invasive procedure in a an open-label, single-cohort study.

MK-5475-007: A Phase 2/3, Multicenter, Randomized, Double-blind, Placebo-Controlled, Adaptive Design Study to Evaluate the Efficacy and Safety of MK-5475 in Adults with Pulmonary Arterial Hypertension

PI: David Booth, MD
Coordinator: Stephanie Morris 859-323-5366

Objective: Two cohorts to evaluate the effect of MK-5475: 1) versus placebo on the pulmonary vascular resistance (PVR) at Week 12, 2) versus placebo on 6-minute walk distance (6MWD) at Week 12.

Women's Cardiology:

Women's IschemiA TRial to Reduce Events In Non-ObstRuctive CAD (WARRIOR)

PI: Gretchen Wells, MD, PhD
Coordinator: Evan Cassity 859-218-6633

Objective: To determine whether intensive medication treatment to modify risk factors and vascular function in women patients with coronary arteries showing no flow limit obstruction but with cardiac symptoms (i.e., chest pain, shortness of breath) will reduce the patient's likelihood of dying, having a heart attack, stroke/TIA or being hospitalized for cardiac reasons.

Clinical Research Team

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FELLOWS NEWS/ACCOMPLISHMENTS
ACC.21 POSTERS & ABSTRACTS

EXPLAINING THE BMI PARADOX IN ACUTE MYOCARDIAL INFARCTION

Adham Karim MD, Samiullah Arshad MD, Sara Klinger MD, Vedant Gupta MD
Gill Heart and Vascular Institute, Department of Medicine, University Of Kentucky, Lexington KY

BACKGROUND

Obesity has been associated with lower risk after an acute myocardial infarction, although little else is known to explain this obesity paradox

METHODS

All patients hospitalized for an acute myocardial infarction at a single institution between 1/1/2010 to 7/31/2019 were reviewed. Markers of obesity and frailty were assessed on the impact on survival to hospital discharge. Chi-square analysis and multivariate logistic regression was used.

RESULTS

A total of 3,819 patients were included. According to BMI values, 74 patients were underweight, 814 were normal, 1,151 were overweight, and 1,780 were obese. In-hospital mortality was highest among underweight (8.1%), followed by normal (7.0%), overweight (5.4%), and obese patients (3.5%). The odds ratio for in-hospital mortality for obese patients was 0.577 [95% CI 0.429 - 0.776]. 417 (10.9%) of patients were frail. Frailty was independently associated with an increased risk of in-hospital mortality (OR 4.413 [3.330 - 5.850]). After adjusting for frailty, the odds ratio for in-hospital mortality among obese patients became non-significant. In multivariate analysis, a history of CHF, PAD, stroke, and frailty were significantly associated with increased mortality; while age and BMI were not.

- Frailty is a strong indicator for poor outcomes in Acute Myocardial Infarction
- Adjustment for confounders is essential before assessing effect of BMI.
- BMI may not be the best mode of assessment of the nutritional status of patients as obesity can be associated with Frailty and Malnutrition.

ACC.21

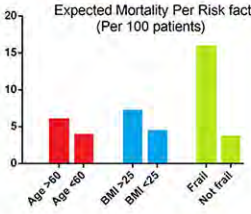
DISCUSSION

Frailty is defined as loss of muscle mass, exhaustion, decreased strength, slowing of pace and functional capacity. Frail patients are known to have higher adverse outcomes in setting of myocardial infarction. The BMI paradox is reported by several authors from observational studies. Paradox is thought to exist among patients with AMI due to obese patients having higher nutritional reserve and being treated aggressively for secondary prevention. In lines to our results, meta-analysis of 6 RCTs by Shahim et al concluded no association between body mass index and infarct size, one-year mortality, or heart failure hospitalization.

CONCLUSION

This study demonstrates that frailty is a much stronger predictor of outcomes than BMI, and accounting for this variable negates any benefits seen with increased BMI.

FIGURE 1



DISCLOSURE INFORMATION

Above authors have no disclosure.

Separating The Impact Of Frailty And Malnutrition On In-hospital Outcomes In Patients With Acute Myocardial Infarction

Adham M Karim, M.D.; Ethan Fry, D.O.; Vedant Gupta, M.D.

Division of Cardiovascular Medicine, Linda and Jack Gill Heart and Vascular Center, University of Kentucky, Lexington, USA

BACKGROUND

- The prevalence of malnutrition among all hospitalized patients in the US is estimated to be around 40-54%.
- The separate impacts of malnutrition and frailty on early outcomes after myocardial infarction is not well studied
- We sought to identify the prevalence and outcomes of diagnosed malnutrition, and compared them to frailty among a contemporary cohort of patients with AMI in the United States.

METHODS

- We queried the National Inpatient Sample (NIS) from January 2012 to September 2015 (26,859,889 hospitalizations)
- A frailty index was constructed using a modified version of the Colon Cancer Frailty Index (CCFI) which has been validated using this dataset
- Using complex survey analysis, multivariable models were used to assess for in-hospital mortality, mechanical circulatory support (MCS) use, cardiogenic shock, acute kidney injury (AKI), and length of stay (LOS)
- Statistical significance for p values was set at < 0.05.
- The Pearson Chi-square test was used to compare categorical variables, while continuous variables were compared with the student's t test or one-way Analysis of Variance (ANOVA), as appropriate.

Malnourished patients hospitalized with AMI have higher rates of in-hospital mortality, cardiogenic shock, MCS use, and AKI. A similar, but less severe trend was observed among frail patients.

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RESULTS

- Out of 2,260,425 AMI hospitalizations, 78,095 (3.5%) had diagnosed malnutrition
- 80,440 (3.6%) had no diagnosis of malnutrition but were frail
- Malnutrition and frailty were both associated with increased mortality (12.1% vs 7.5 vs 3.9%, P<0.001)
- Malnourished patients were more likely to develop cardiogenic shock, require MCS, and to develop AKI requiring dialysis compared to both frail and well nourished patients.

CONCLUSION

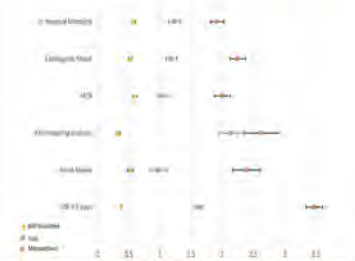
Further investigation into the role of nutritional interventions for malnourished and frail patients with AMI is needed.

DISCUSSION

- Identification of frail and malnourished patients early in their hospital course could result in improved outcomes
- There is overlap between malnourished and frail patients, but these are two distinct entities with differing impacts.

FIGURE 1

Adjusted Odds Ratios for In-hospital Outcomes Based on Nutritional Status and Frailty



DISCLOSURE

All authors have no relevant financial relationships to disclose

Impact and Clinical Outcomes of the Chest Pain Optimal Care Pathway

Joshua Eason DO, Brian Kauh MD, Joshua Duchesne MD, Shruti Nanivadekar, Mikiyas Desta , Vedant Gupta MD
Division of Cardiovascular Medicine, University of Kentucky, Lexington, Kentucky

Introduction

- Chest pain is the most common presentation to the emergency room (ER) with about 8 to 10 million visits and costs up to $10-13 billion dollars in the US annually
- As the vast majority of these cases have no evidence of acute myocardial infarction (AMI), rapid rule-in and rule-out diagnostic testing strategies have been trialed in the ER to quickly risk stratify and identify low-risk patients, but fear of early downstream events limits utilization

Objective

- To assess the impact of our Chest Pain Optimal Care Pathway on 30-day events

Study Design

- Retrospective analysis of adults who presented to UK ER with the primary complaint of non-traumatic chest pain from 6/1/18 to 6/1/19 and were subsequently discharged without receiving any inpatient intervention or testing
- The Chest Pain Optimal Care Pathway was implemented starting 12/11/18, allowing for about 6 months pre- and post- intervention

Outcomes

- Primary outcome: Major adverse cardiovascular events (cardiovascular or unknown cause of death, acute MI, or unplanned non-ACS PCI/CABG)
- Secondary outcomes: Planned outpatient interventions, ischemic evaluation, and outpatient follow-up within our system

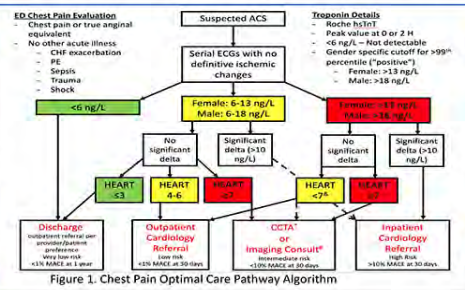
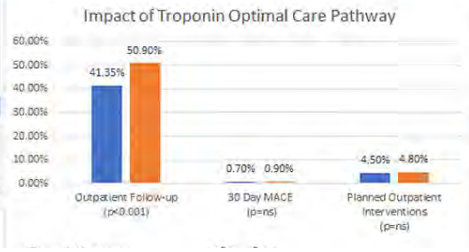


Figure 1. Chest Pain Optimal Care Pathway Algorithm



Results

- 3759 patients who presented with chest pain during the study period, 1830 pre-intervention and 1929 post-intervention
- Of these, 1738 had follow-up data in our system, with a significantly higher proportion of patients following up in post-intervention (41.3% vs 50.9%, p<0.001)
- No difference in the primary outcome of MACE at 30 days (0.7% vs 0.9%, p=ns)
- No differences in planned outpatient interventions (0% vs 0.3%, p=ns), outpatient testing (4.5% vs 4.8%, p=ns)

Conclusion

- The introduction of a Chest Pain Optimal Care Pathway at our institution is a safe strategy with a low risk of MACE events at 30 days after being discharged from the ED for chest pain
- Within 6 months of implementation, preliminary data appears to show that not only did our pathway result in non-inferior outcomes, but it also assisted in helping patients achieve higher rates of outpatient follow-up for further care

Authors' Disclosure: None

Contact E-mail: Joshua.Eason@uky.edu

Project MISSION Syncope Smartphone Application: Validating an Evidence-Based Clinical Decision Support Tool

Syedreza A. Haider MPA, Ethan M. Fry, MD, Vedant A. Gupta, MD, Shiraz Arvin, Colleen A McMullen, MA, MBA, Jing Li, MD, MS, DrPH
University of Kentucky; Lexington, Kentucky

BACKGROUND

- Syncope is a common presentation with significant uncertainty between guidelines and clinical practice.
- The MISSION Syncope smartphone application (App) is a clinical decision support (CDS) tool that generates an evidence-based rank order differential diagnosis for syncope.
- This study aims to validate the accuracy of the app's model used to derive the differential diagnosis.

METHODS

- This is a retrospective chart review of adult patients presenting to an Academic Emergency Department for syncope between January 2018 to March 2020.
- A board-certified internist reviewed available clinical data to identify the most likely differential diagnosis, confirmed by another board-certified cardiologist.
- The same patient data was then inputted into the App to populate a differential diagnoses.
- Cohen's Kappa coefficient was used to measure agreement between clinician diagnosis and the App's highest rank differential.

Figure 1. One team member (investigator) for differently without referencing the app. The other team member reviewed medical records and app guidance to generate a differential diagnosis. A final unified differential was adjudicated by discordance in the differential diagnoses between the two team members. Using the same information, a team member (physician) the case through the app's differential generation to derive the app's differential. Any measured discordance between the app's differential and the clinician chart review.

Project MISSION Syncope smartphone application will enable clinicians to aid in the implementation of a high-value guideline-reflective approach to the diagnostic workup of patients presenting with syncope by use of a Clinical Decision Support (CDS).

ACC.21

RESULTS

- Sixty-two true syncope cases were identified.
- Clinician-determined etiologies were 90.3% (56/62) vasovagal, 4.8% (3/62) orthostatic, and 3.6% (2/62) neurogenic respectively.
- Analysis demonstrated a correlation of 96.7% between the clinician diagnosis and the App's highest ranked differential.

Figure 2. Graphical representation of concordance between physicians' differential diagnosis and app-generated differential.

CONCLUSION

- The App generates a top differential diagnosis that is highly correlated with multiple physician reviews.
- The App demonstrates the stability of using evidenced-based literature along with clinical expertise in developing a CDS tool that can produce a reliable differential.
- Assessment in patient cohort with a larger proportion of cardiogenic causes of syncope is necessary to establish capacity to identify high-risk etiologies of syncope.

DISCLOSURE INFORMATION

None of the Authors have any disclosures.

Implementation of an Optimal Care Pathway for Chest Pain at a Multidisciplinary Academic Medical Center

Shruti Nanivadekar, BS, Joshua Duchesne, MD, Joshua Eason, MD, Brian Kauh, MD, Mikiyas Desta, MD, Steve Leung, MD, and Vedant Gupta, MD, FACC
University of Kentucky, Department of Cardiology

Introduction

Chest pain is the most common reason for ED visit with 8-10 million patient visits annually costing $10-13 billion.
Less than 10% of patients with chest pain are diagnosed with an acute coronary syndrome (ACS).
The HEART score condenses patient information into a simple number that can indicate ACS risk and guide early treatment.
The current reporting of HEART score and strategies to improve the reporting has not been assessed.

Methods

This is a retrospective cohort study of adult patients presenting to the University of Kentucky Emergency Department (ED) with chest pain between 6/1/2018 to 6/1/2019.
The Optimal Care Pathway was instituted on 12/11/2018.
The pathway was implemented using a dedicated multi-level education plan which included attending physicians, resident physicians and cardiology fellows, and a chest pain journal club which discussed data on the HEART score.
The patients were divided into 3 groups, pre-intervention, early post-intervention (first 3 months after intervention), and late post-intervention (next 3 months).
The HEART score documented in the electronic health record was collected if reported.
The electronic health recorded was also reviewed and a HEART score was calculated by trained independent reviewers.
Rates of reporting was compared between the 3 periods using Chi-square value.

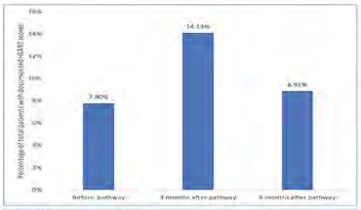


Figure 1: Percentage of HEART score documentation in the Emergency Department increased by 79% in the early phase (p<0.0001), followed by a 36% decline (p=0.003).

Figure 2: 79% of patients with documented HEART scores were appropriately risk-stratified for ACS, and 21% were retrospectively reclassified into higher or lower risk strata.

Results

- 3245 patients were seen over the study period, 1717 patients prior to intervention, 737 patients in the early post-intervention period, and 791 patients in the last post-intervention period.
- HEART score documentation was 7.9% in the pre-intervention period.
- Reporting of HEART score increasing by 79% to 14.1% (p<0.0001). However, in the late post-intervention period, HEART score reporting decreased by 36% from the early period to 9.4% (p of 0.003) (Fig. 1).
- Of the HEART scores documented, 85% were within 1 point of the expert scoring, with 42% exactly matching the investigators' scores.
- 28% of emergency department HEART scores were higher than investigators' scores, and 29% were lower.
- Using cutoffs of ≤3 for low risk, 4-6 for intermediate risk, and ≥7 for high risk, the discordance would reclassify 21% of the patients (Fig. 2).

Discussion

- Reporting of HEART score is fairly low (9.7%) in the overall cohort.
- The initial 79% increase of HEART score documentation in the emergency department in the first 3 months of pathway implementation, followed by a regression, shows that while our educational interventions were temporarily effective, this method is not sustainable enough to ensure adherence long-term.
- Furthermore, while overall accuracy of ED reported HEART scores was good, 21% resulted in risk reclassification. This highlights a need for a more long-term education programs or other systemic interventions for sustainability.

Authors' Disclosure

Nothing to disclose.

FELLOWS NEWS
ACC.21 ABSTRACTS

CORONARY ARTERY DISEASE PROGRESSION IN PATIENTS WITH END-STAGE LIVER DISEASE: FINDINGS FROM CCTA MAY IMPACT PREOPERATIVE CARDIAC TESTING RECOMMENDATIONS

Zachary Neace, Caleb W. Phillips, Gregory Sinner, Talal S. Alnabelsi, Malay B. Shah, Roberto Gedaly, Vedant Gupta, Vincent Sorrell, Steve Leung

UNDERUTILIZATION OF STATIN THERAPY IN PATIENTS WITH END-STAGE LIVER DISEASE AND CORONARY ARTERY CALCIFICATION

Gregory J. Sinner, Do Hyun Yun, Mihir G. Shah, Vedant Gupta, Malay B. Shah, Roberto Gedaly, Vincent Sorrell, Steve Leung

WOMEN BENEFIT FROM CRT GREATER THAN MEN, AND IT IS DUE TO MORE THAN JUST VENTRICULAR SIZE

Josue Villegas-Galaviz, Mark Kauth, Eric Robinson, Gregory Sinner, Tanyanan Tanawuttiwat, Maya Guglin

MANAGING TRICUSPID VALVE INFECTIVE ENDOCARDITIS IN INTRAVENOUS DRUG USERS: IS IT TIME TO ENDORSE THE CONSERVATIVE APPROACH?

Rvan Ruhr, Talal Alnabelsi, Gregory Sinner, Steve Leung

IMPLANTABLE CARDIOVERTER DEFIBRILLATOR THERAPY IN PATIENTS WITH END STAGE RENAL DISEASE RESULTS FROM THE NATIONWIDE INPATIENT SAMPLE DATABASE

Karam Ayoub, Ethan Fry, Meera Marji, Ahmad Masri, Aaron Hesselson, Kristin Ellison

THE SAFETY OF PULMONARY VEIN ISOLATION IN PATIENTS WITH ATRIAL FIBRILLATION AND CHRONIC THROMBOCYTOPENIA-RESULTS FROM THE NATIONWIDE INPATIENT SAMPLE DATABASE

Karam Ayoub, Ethan Fry, Meera Marji, Ahmad Masri, Kristin Ellison, Aaron Hesselson

LONG TERM OUTCOMES IN CARDIAC RHYTHM MANAGEMENT DEVICE PLACEMENT FOLLOWING INSIDE-OUT CENTRAL VENOUS ACCESS TECHNIQUE

Ethan Fry, Gregory Sinner, Karam Ayoub, Aaron Hesselson

DETERMINATION OF LEFT MAIN CORONARY ARTERY STENOSIS VIA NON-INVASIVE TESTING TO GUIDE REVASCULARIZATION IN ISCHEMIC HEART DISEASE

Thomas H. Wool, Vedant A. Gupta

FELLOWS NEWS
GRADUATION

Cardiovascular Disease
Ashley Brunmeier
Joshua Duchesne
Joshua Eason
Mary-Beth Fisher
Brian Kauh
Matthew Rafn
Matthew Sousa

Advanced Heart Failure
Jad Ballout
Muhammad Nadeem

Advanced Cardiac Imaging
Ahmed Noor
Gregory Sinner

Electrophysiology
Karam Ayoub

Interventional Cardiology
Luai Alhazmi
Hussam Hawmdeh

Congratulations!

For more photos please use the link below:
https://markmahan.photoshelter.com/gallery/210606-Gill-Heart/G00003XWJqbJPI9U/C0000C3hNi6d9fSQ
Password: UK

FELLOWS NEWS
AWARDS

Michael G. Spain Award
Given to faculty/staff for extraordinary contributions toward the betterment of the fellowship program–
Dr. David Booth

Borys Surawicz Award
Given to a faculty member for excellence in teaching –
Dr. Vedant Gupta

David J. Moliterno Award for Excellence in Clinical Research –
Drs Gregory Sinner and Karam Ayoub

Teresa Hignite Award
Given to a fellow who exhibits exceptional professionalism and a positive attitude –
Dr. Ashley Brunmeier

AFFILIATE NEWS

THE PULSE - NEXT WEBINAR JULY 14

The Pulse is the Gill Affiliate Network's official webinar series. Held bimonthly, these educational courses are accredited for multiple clinical personnel and focused on a broad range of topics relating to cardiovascular clinical care, program management, and administration.

The next, The Pulse webinar, is scheduled for **Wednesday, July 14 from 12:00 – 1:00 PM EST**.

This CME-accredited webinar will feature heart failure cardiologist, **Dr. Gaurang Vaidya**, who will present, *Cardiac Amyloidosis: ATTR-acting All Our Attention*. Dr. Vaidya's presen-tation will focus on recognizing, diagnosing, and treating cardiac amyloidosis.

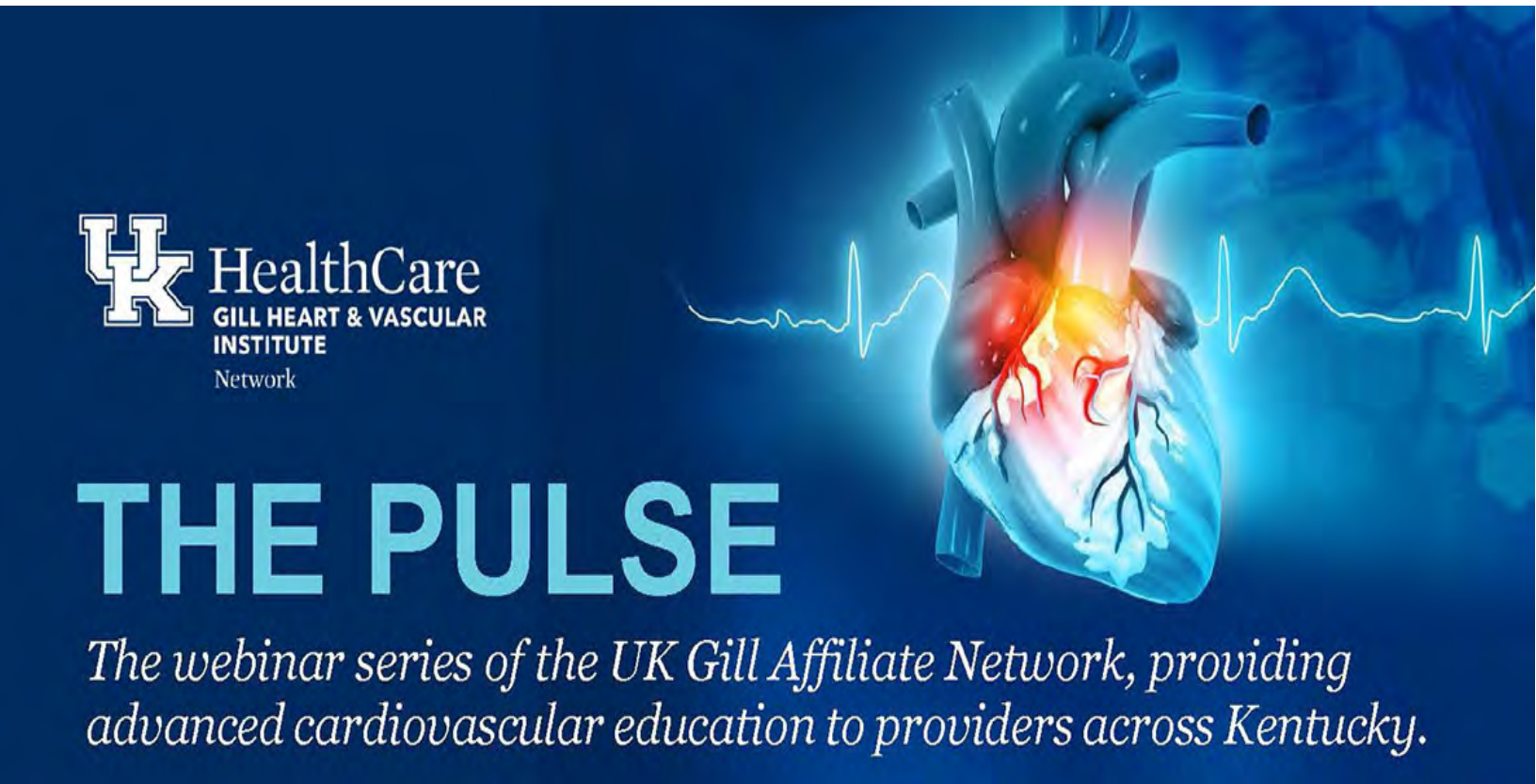
To connect remotely, please use the following link: https://uky.zoom.us/j/87434783148.

For additional information about the webinar and to RSVP, please contact Rebecca Craft by phone at (859) 285-8083 or by email at rebecca.craft@uky.edu.

Join us for future The Pulse webinars:

Advanced Therapies for Heart Failure
Emma Birks, MD
September 29, 2021/12-1PM EST

Surgical Considerations in Heart Transplantation
Mike Sekela, MD
November 10, 2021/7-8 AM EST



Above from L to R: Drs. Sharat Koul, Aslam Ahmad, Gary Grigsby Jr., Shawn Flynn, and Hussam Hamdalla

EPHRIAM MCDOWELL REGIONAL MED CENTER **RECEIVES NEW ACCREDITATION**

Congratulations to Gill Affiliate Network member, Ephraim McDowell Regional Medical Center (EMRMC)!

The American College of Cardiology has recently recognized Ephraim McDowell for its demonstrated expertise and commitment in treating patients with chest pain, and EMRMC has been awarded Chest Pain Center Accreditation with Primary PCI based on rigorous onsite evaluation of the staff's ability to evaluate, diagnose and treat patients who may be experiencing a heart attack.

"By earning Chest Pain Center accreditation, it validates to our communities that we are dedicated to providing excellent care for our chest pain patients," says Dan McKay, president and CEO, Ephraim McDowell Health. "Our associates and physicians con-tinually work together to pro-vide the best care possible for the patients we serve."

Congratulations to Ephraim McDowell on this recognition. Thank you for your continued focus on excellent cardiovascular care. We're proud to have you in the Gill Affiliate family!

To learn how the Gill Affiliate Network is working across the Commonwealth to ensure access to high-quality care for all Kentuckians, visit:

https://ukhealthcare.uky.edu/gill-heart-vascular-institute/professionals/affiliates

Ephraim McDowell Heart & Vascular Institute is located at 216 West Walnut Street in Danville, across from Ephraim McDowell Regional Medical Center. EMRMC physicians also see patients at these other locations in central Kentucky:

Liberty – 511 Middleburg Street
Harrodsburg – 470 Linden Avenue, Suite 7

Springfield – 280 Lincoln Drive
Russell Springs – 92 Dr. Joe T. Pettey Drive, Suite 600

Monticello – One South Creek Drive, Suite 102

RESEARCH NEWS
NIGMS R35 GRANT

UK Professor Awarded $1.9M for Sepsis Research

A University of Kentucky College of Medicine professor has been awarded a $1.9 million National Institutes of Health (NIH) grant for his research on the body's immune response to sepsis, which could potentially help to improve therapies for the common disease.

Xiangan Li, a professor in the Department of Physiology and the Saha Cardiovascular Research Center, received the prestigious R35 grant from the NIH's National Institute of General Medical Sciences (NIGMS), which will fund sepsis research in his lab over the next five years.

Sepsis is a life-threatening condition that occurs when an infection triggers a chain reaction throughout the body. Without timely treatment, it can quickly lead to tissue damage, organ failure and death. The Centers for Disease Control and Prevention reports that nearly 270,000 Americans die as a result of sepsis every year, and one in three patients who die in a hospital has sepsis.

"Thirty to 60% of sepsis patients have an impaired adrenal stress response and cannot produce enough glucocorticoids," said Li.

Li studies how hormones called glucocorticoids regulate the body's immune system in response to sepsis. Glucocorticoids are released by the adrenal glands and help to reduce certain aspects of immune function such as inflammation. They are often supplemented as a therapy to treat sepsis and other diseases caused by an overactive immune system. However, not all sepsis patients may benefit from additional glucocorticoids, Li says.

"Thirty to 60% of sepsis patients have an impaired adrenal stress response and cannot produce enough glucocorticoids," said Li. "But for the others, supplementing glucocorticoids may not be necessary or beneficial."

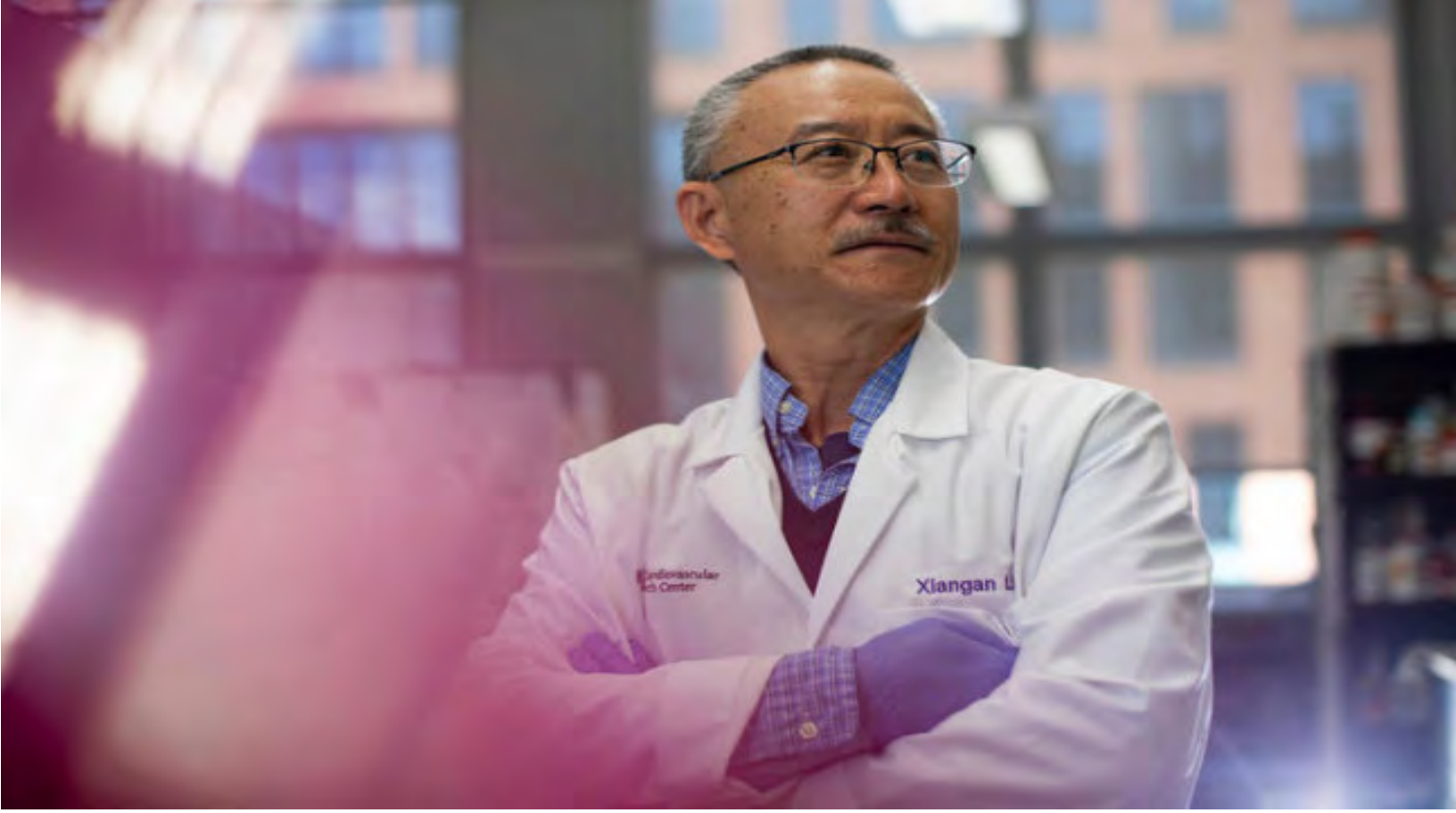
Research conducted in Li's lab provides a proof of concept that it could actually be harmful. Septic mice were treated with glucocorticoids and those with impaired adrenal stress responses had better outcomes, but those with normal adrenal stress responses experienced increased mortality as a result of the therapy.

Li says the findings provide an explanation for why the current glucocorticoid therapy for sepsis is controversial, as the therapy is given to patients without considering the status of adrenal insufficiency. Li proposes that before giving glucocorticoids to septic patients, a precision medicine approach should be taken to identify whether or not they have an adrenal insufficiency.

"The mechanisms behind glucocorticoids and immune regulation may be different than previously understood," Li said. "The ongoing research funded by this grant will answer questions that we hope will improve the overall efficacy of sepsis therapy and save many lives."

Research in Li's lab will continue to give scientists a better understanding of the role glucocorticoids play in immune function, which could ultimately lead to improved patient outcomes for sepsis.

"The mechanisms behind glucocorticoids and immune regulation may be different than previously understood," Li said. "The ongoing research funded by this grant will answer questions that we hope will improve the overall efficacy of sepsis therapy and save many lives."



The NIGMS aims to support basic research that increases the understanding of biological processes and lays the foundation for advances in disease diagnoses and prevention. The NIGMS' R35 grant, also called the Maximizing Investigators Research Award (MIRA), increases the efficiency of NIGMS funding by providing researchers with greater stability and flexibility, thereby enhancing scientific productivity and the chances for important breakthroughs.

Research reported in this publication was supported by the National Institute of General Medical Sciences of the National Institutes of Health under Award Number R35GM141478. The content is solely the responsibility of the authors and does not necessarily represent the official views of the National Institutes of Health.

Story from UK COM web page: https://research.med.uky.edu/news/uk-professor-awarded-19m-sepsis-research

Lab Information

Li Lab Members:
Ling Guo, MD
Qian Wang, BS
Dan Hao, MS
Misa Ito, MD

Dr. Li's Website click here.

Recent publications:

Ito, M.; Wang, Q.; Hao, D.; Sawada, H.; Huang, B.; Guo, L.; Daugherty, A.; Li, XA "Ultrasound Monitoring of Thymus Involution in Septic Mice." *Ultrasound in medicine & biology* 47, 3 (2021): 769-776. [PubMed Link]

Ito, M.; Ye, X.; Wang, Q.; Guo, L.; Hao, D.; Howatt, D.; Daugherty, A.; Cai, L.; Temel, R.; Li, XA "SR-BI (Scavenger Receptor BI), Not LDL (Low-Density Lipoprotein) Receptor, Mediates Adrenal Stress Response-Brief Report." *Arteriosclerosis, thrombosis, and vascular biology* 40, 8 (2020): 1830-1837. [PubMed Link]

Wu C, Lu W, Zhang Y, Zhang G, Shi X, Hisada Y, Grover SP, Zhang X, Li L, Xiang B, Shi J, Li XA, Daugherty A, Smyth SS, Kirchhofer D, Shiroishi T, Shao F, Mackman N, Wei Y, Li Z. Inflammasome Activation Triggers Blood Clotting and Host Death through Pyroptosis. *Immunity*. 2019 Jun18;50(6):1401-1411.e4. [PubMedLink]

RESEARCH NEWS
MYOCARDIAL RECOVERY ALLIANCE

MYRA: An Alliance Finding Innovative Approaches for Improved Cardiac Recovery

For many years, ventricular assist devices (VADs) were considered a last resort for patients with serious heart failure. These mechanical pumps, which help maintain blood circulation, were mainly used for patients awaiting a heart transplant.

Recent studies conducted by University of Kentucky researchers suggest VADs actually could be used to recover the hearts of patients with heart failure, even those with advanced heart failure, possibly preventing their need for transplants in the future.

Holding this research at UK could be groundbreaking for the state of Kentucky. UK HealthCare performs more than 40 heart transplants per year, or one percent of heart transplants worldwide.

"In the early days, no one really wanted to be involved with VADs because the outcomes weren't good," Dr. Birks said. "But we found that by changing the parameters on the pump, we can get patients to feel better".

Emma Birks, MD, PhD, and Ken Campbell, PhD, are co-principal investigators of the Myocardial Recovery Alliance (MYRA), a team established under the UK College of Medicine's Alliance Research
Initiative. Together, with a team of highly qualified cardiovascular experts and scientists across campus, they're leading revolutionary studies that could change standards of cardiac care in real time.

Cardiovascular disease is one of the Research Priority Areas from the UK Office of the Vice President for Research.

"In the early days, no one really wanted to be involved with VADs because the outcomes weren't good," Dr. Birks said. "But we found that by changing the parameters on the pump, we can get patients to feel better. When you take a very sick young person and you get them to survive and live with the pump, then go home and have a good quality of life and then ultimately return the heart function to normal, it's really very rewarding."

Dr. Birks and Dr. Campbell bring international experience to Kentucky, having come from "one U.K. to another."

Dr. Birks is from England, where she earned her training and became a global leader in myocardial recovery and the study of VADs. She has led numerous clinical trials and long studied molecular mechanisms impacting heart failure and recovery. She recently joined the University of Kentucky as section chief of advanced heart failure, mechanical circulatory support, and heart transplantation after nearly a decade at the University of Louisville.

Dr. Birks and Dr. Campbell bring international experience to Kentucky, having come from "one U.K. to another."

Dr. Campbell, originally from Scotland, is a professor of physiology with expertise in cardiac contractility and mathematical modeling of cell and molecular-level contractile function. He joined the University of Kentucky in 1998 and now directs the Center for Clinical and Translational Science (CCTS) Biospecimens Core.

The collaborative structure of the Alliance Research Initiative has played a major role in bridging the connections between researchers and cardiologists, which is not a simple task but one that can make a huge difference in accelerating the research process. Due to the nature of the profession, clinicians invest much of their time in practice. In the MYRA Alliance Dr. Birks and other cardiologists are invested in research, too.

"Before joining MYRA, I might not have been able to connect so easily with specialists involved in clinical care, but now I have nearly 15 cardiologists in my phone contacts who I can reach out to, and sometimes get responses in 30 seconds," Dr. Campbell said. "These connections aren't unheard of, but rare, and they are really crucial in making our research more efficient."

Meanwhile, the team benefits greatly from Dr. Campbell's leadership of the CCTS Biospecimens Core and the Gill Cardiovascular Biorepository. These biobanks provide researchers and clinicians within MYRA samples of myocardium donated by patients for research.

Collaborations across departments and colleges have allowed the MYRA team to make strides in research and clinical developments. The team already has developed computer models of hearts that evolve in response to pharmaceutical and genetic manipulation at the molecular level. Clinicians and scientists will use knowledge gained from these models to improve patient care and treatment.

With the right connections to experts and resources, MYRA is poised to lead clinicians and researchers in Kentucky and beyond to better understand myocardial recovery while allowing patients with serious heart failure to live longer, healthier lives.

To learn more about MYRA and our other Alliance teams, click here: [https://med.uky.edu/alliance.](https://med.uky.edu/alliance)

MYRA TEAM MEMBERS:

Ahmed Abdel-Latif, MD, PhD
Mark Ebbert, PhD
Vedant Gupta, MD
Candice Harvey Falls, PhD
Andrew Kolodziej, MD
Sarah Kosta, PhD
John Kotter, MD
Steve Leung, MD
Bryana Levitan, RDCS
Greg Milburn, MD/PhD Student
Vince Sorrell, MD
William Stoops, PhD
Gaurang Vaidya, MD
Jonathan Wenk, PhD

APRIL
SAHA AORTIC CENTER

A new research center focused on aortic disease has been established at the University of Kentucky thanks to a gift from the Saha Foundation.

Housed in the Biomedical Biological Science Research Building on the UK campus, the Saha Aortic Center will promote research and education to advance clinical care for disease of the aorta. Aortic disease can cause the expansion and rupture of a vessel wall in the chest or abdominal area, leading to potentially deadly internal bleeding.

Alan Daugherty, Ph.D., chair of the Department of Physiology and director of the Saha Cardiovascular Research Center in the UK College of Medicine, will serve as director of the Saha Aortic Center.

"Aortic disease affects the major artery that carries blood from the heart to the rest of the body," Daugherty said. "Having this center that specifically focuses on research and education in this field is vital."

David Minion, MD, program director and professor of Vascular Surgery, and Mary Sheppard, MD, assistant professor of Family and Community Medicine, Surgery and Physiology, will serve as co-directors for the center.

"This donation from the Saha Foundation is a tremendous gift to the people of Kentucky, as they will not need to leave the state to access the most cutting-edge care for aortic disease," Sheppard said.

"Dr. Saha has devoted a lifetime of service to the health care needs of Kentucky. The generous gift attests to his and his family's passion and dedication to our Commonwealth," Minion said. "I am honored to be a part of this exciting initiative."
Sheppard founded the UK Aortic Clinic and performs NIH-funded research on Marfan syndrome and genetically based aortic disease. She works closely with vascular surgeons to provide a transdisciplinary team approach for managing patient's aortic disease.

"This donation from the Saha Foundation is a tremendous gift to the people of Kentucky, as they will not need to leave the state to access the most cutting-edge care for aortic disease," Sheppard said. "We have one of the largest groups of basic scientists in the world who do research on aortic disease. By facilitating collaboration with our physicians, this gift will position UK to be a premier center for the treatment of people with aortic disease throughout the world."

The Saha Foundation was established in 1999 by Dr. Sibu and Becky Saha. Its mission is to promote research and education of cardiovascular disease in the Commonwealth of Kentucky. The foundation offers many awards and scholarships to scientists, medical students, nurses and other health professionals.

The Saha's have considered Lexington home for more than 40 years and remain steadfast in their community involvement and generous philanthropy. Following a distinguished career in private practice, Dr. Saha joined the faculty of the UK College of Medicine in 2002 as a

professor of surgery in the Division of Cardiothoracic Surgery. Becky is past president of Friends of the Arboretum. During her tenure as president, Friends of the Arboretum launched a major campaign to establish the Kentucky Children's Garden, which opened in 2011.

The couple's daughter, Rani Saha, became president of the Saha Foundation in 2020. Currently, she works in New York City as a motion graphics designer and artist alongside many Fortune 500 companies, post-production and design houses, as well as digital agencies.

Figure above: The Saha Foundation was established in 1999 by Dr. Sibu and Becky Saha. Their daughter, Rani, became president of the foundation in 2020. The Saha Foundation promotes research and education of cardiovascular disease. Mark Cornelison | UKPhoto

VACE Poster Pitch Winner!

The Von Allmen Center for Entrepreneurship (VACE) conducted its annual CCTS Poster Pitch Competition. The top winners are:

Tharunika Venkatesan- 1st
Gaurang Vaidya- 2nd
Robert Anderson 3rd
Natalie Jo Hawes - Director's Award

Dr Vaidya, pictured below, received second place for his research idea on using ultrasound for bedside fluid status assessment. See the video here: here: https://internalmedicine.med.uky.edu/im-news-1

MAY
HEART WALK

Thank you! Thank you! Thank you!

Because of your hard work, UK HealthCare raised over $22,000!

Gill Teams	Coach	Raised
Clotters	Jeremy Wood	$1,045.16
Pumped-Up Hearts	Jacob Stone	$5,057.79
UK Cardiovascular ICU	Gregory Kempf	$51.03
UKHC Gill Heart Institute Administration	Amy Iwahara	$3,700.67
UKHC Pharmacy	Ashley Schenk	$2,337.76

HealthCare
GILL HEART & VASCULAR INSTITUTE

INAUGURAL MATTHEW SZABUNIO SYMPOSIUM ON CARDIO-ONCOLOGY

OCTOBER 16

7:15 A.M. – 4 P.M.

Pavilion A, UNIVERSITY OF KENTUCKY, LEXINGTON, KY
AND
VIRTUAL

https://www.cecentral.com/live/20738

CARDIO-ONCOLOGY
SUBSPECIALTY & SYMPOSIUM

Many cancer therapies may have harmful side-effects on the heart during or after cancer treatment. Cardio-oncology is dedicated to the early detection and treatment of heart damage from those therapies. It also incorporates risk stratification of patients –particularly those with previous cardiac conditions or other risk factors – prior to undergoing surgery or cardio-toxic chemotherapies or the newer immunotherapies.

For those at risk, cardio-oncology teams include both cardiologists and oncologists working together to coordinate the best care. This provider collaboration works to protect your heart health while also providing the most effective cancer treatment.

Amit Arbune, MD, MHA, FACC, is a cardiologist with a special interest in cardiac care for cancer patients. Dr. Arbune received his medical degree from MGM Medical College in India. He holds a master's in healthcare administration from the University of Kentucky and completed his Internal Medicine Residency at Northeast Ohio Medical University. Arbune completed his Cardiovascular Disease Fellowship at Case Western Reserve University, where he served as chief fellow, and an Advanced Cardiovascular Imaging Fellowship at Yale University – New Haven Medical Center in New Haven, CT.

Arbune has extensive experience in general cardiology, and advanced cardiovascular imaging. Having clinical and research experience in cardio-oncology at Yale University, he has a keen interest in cardiac care for cancer patients. Arbune has participated in numerous clinical research projects and presented at many national conferences.

"I am focused on protecting your patients' hearts from the side effects of cancer treatments and keeping them strong to receive the best available cancer treatments. My team and I provide a collaborative care plan tailored for these patients."
– Amit Arbune, MD, MHA,

Cancer and cardiovascular disease are the top two causes of death in Kentucky and the United States. Please join us on October 16 for the *Inaugural Matthew Szabunio Symposium on Cardio-oncology*. *The purpose of the Cardio-oncology*. This symposium will provide state-of-the art best practice information regarding the continuum of cardiac care for the oncology patient. For more details and to register see: https://www.cecentral.com/live/20738

Who to refer:
- Cardiac patients with diagnosis of cancer.
- Cancer patients with established cardiotoxicity from cancer therapies.
- Cancer patients undergoing therapies that may affect the heart (including radiation).
- Cancer survivors (especially childhood survivors).

To refer a patient, call 800-888-5533.

JUNE
AORTIC ANEURYSM R35

Thanks to a $5.6 million grant from the National Institutes of Health (NIH), a University of Kentucky College of Medicine team will study the culprit behind thoracic aortic aneurysms, which could lead to a treatment for the potentially deadly disease.

A thoracic aortic aneurysm is a weakened area in the aorta, the main artery that carries blood away from the heart to the body. The condition puts people at risk for a dissection, the rupturing of the aorta that can cause life-threatening bleeding or sudden death.

Understanding why the aorta's tissue lends itself to thoracic aortic aneurysms and dissection (TAAD) could translate into treatments for the disease, says Alan Daugherty, Ph.D., chair of the UK Department of Physiology, Gill Foundation Chair in Preventative Cardiology, and director of the Saha Cardiovascular Research Center and the Saha Aortic Center in the UK College of Medicine.

There are currently no medications to directly treat the condition or prevent an aneurysm from growing. Patients typically take a "watchful waiting" approach, where the aneurysm is scanned regularly to see if it grows enough to require surgical repair.

Daugherty received a seven-year $5.6 million R35 grant from the NIH's National Heart, Lung, and Blood Institute (NHLBI) to study the tissues of the aorta and provide insight into how and why TAAD occurs.

"We hope this research program will contribute to providing new medical options so that watching and waiting won't be the only option for these patients," Daugherty said. "This grant gives us an opportunity to find pathways for a drug therapy to stop the aneurysm from growing so patients can avoid surgical intervention."

While thoracic aortic aneurysms can happen spontaneously and without a known cause, they are also associated with a wide range of both genetic and non-genetic diseases or syndromes. In these cases, aneurysms tend to occur in very specific parts of the aorta.

"We hope this research program will contribute to providing new medical options so that watching and waiting won't be the only option for these patients," Daugherty said. "This grant gives us an opportunity to find pathways for a drug therapy to stop the aneurysm from growing so patients can avoid surgical intervention."

For example, Daugherty says that men in their 60s who have smoked tend to have an aneurysm in the lower portion of the aorta. For people with Marfan syndrome, an inherited disorder that affects connective tissue, aneurysms commonly occur in the section of the aorta that connects to the heart. His research program seeks to understand what causes the differences, and the findings could provide a target for drug development.

"The tissue throughout the aorta is apparently similar. If you looked at different samples under a microscope, you probably wouldn't see any obvious differences. But because the locations of aneurysms associated with diseases are so specific, that may not be the case," Daugherty said. "So what is it about this tissue that makes it quite different depending on where it is? And why is it that certain diseases affect certain parts of the aorta and leave the rest totally untouched?"

The key may be in a material called extracellular matrix, which binds aortic tissue together. The extracellular matrix is what degrades to weaken the tissue in an aneurysm, and researchers currently have little understanding about what makes that happen.

Using state-of-the-art tools including ultrasonography, MRI and micro-computed tomography, Daugherty's lab will seek to define how the extracellular matrix fibers are laid down and what makes them either stable or unstable. Their findings in mouse models will be validated in human TAAD samples from a tissue bank at the Baylor College of Medicine.

As the NHLBI R35 grant is intended to give scientists more freedom to conduct groundbreaking research, it will also give Daugherty's lab the flexibility to pursue potential contributions of other tissues and organs to TAAD, as well as TAAD's effects on them.

The program will also build upon his lab's ongoing research to expand the understanding of how the aorta develops. His team has already identified unique mechanisms in the way that the aorta grows that could provide more insight for potential drug development.

Two other researchers in the Saha Cardiovascular Research Center – Xiangan Li and Sidney Whiteheart – recently received NIH R35 grants. Daugherty says it's significant that UK has this number of the prestigious awards within the area of cardiovascular research.

"The R35 is unique in that it really focuses on the individual and their research track record rather than the specifics of a project," Daugherty said. "These awards recognize a chronic level of achievement and are a testament to the strength of cardiovascular research across this campus."

Adapted from UKNow.

CV-RPA NEWS
VITAL

Beth Garvy, PhD, and Sidney Whiteheart, PhD, originally planned to study blood clotting in HIV-positive patients when they first approached one another to establish a unified research team. Then COVID-19 emerged, and their focus shifted on the disease that started a global pandemic.

Dr. Garvy and Dr. Whiteheart now lead what is called the Virus-Induced Thrombosis Alliance (VITAL), a team supported by the University of Kentucky College of Medicine's Alliance Research Initiative that is working to bridge the gap between infectious diseases and cardiovascular diseases, one of the Research Priority Areas from the UK Office of the Vice President for Research. Dr. Garvy is associate dean for biomedical education and professor in the department of microbiology, immunology, and molecular genetics, while Dr. Whiteheart is a professor of molecular and cellular biochemistry.

The short game of VITAL is to generate publications and collaborate on grants that fund critical research projects. The long game is a much greater goal – establishing a research infrastructure that will make studying infectious diseases a much smoother, more efficient process for clinicians and scientists so when new viruses inevitably appear, as COVID-19 did, UK will be even more prepared for tackling related issues.

Dr. Garvy and Dr. Whiteheart describe their Alliance team's work as "building an airplane while it's still flying." Their team is conducting research and clinical trials, and the infrastructure is growing and improving day by day, but there are still some tasks left to officially establish a system that works like a well-oiled machine. Based on their current trajectory, that goal is attainable.

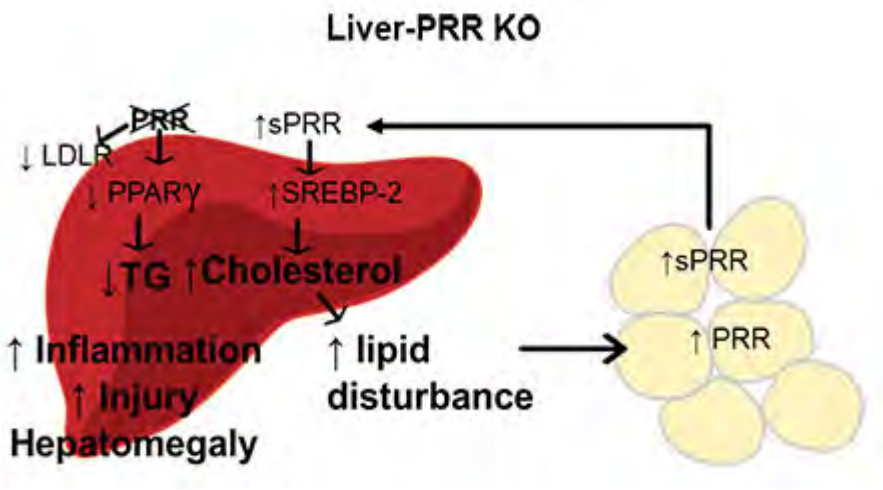
"Had this infrastructure been there from the beginning, we might not have ever had to backtrack," Dr. Garvy said. "But the good thing is that we're now getting to the point where we can bring other people on, and we can help them get what they need because we have now built the airplane, and it can fly, and we are actually getting the workings to be a better resource for the rest of campus."

VITAL began with a search for answers on why HIV-positive patients had an increased risk of blood clots. The team has studied populations in Kentucky, and was beginning to examine HIV-positive patients in Durban, South Africa, through a collaboration with the African Health Research Institute led by VITAL team member Zach Porterfield, MD, PhD, assistant professor of microbiology, immunology, and molecular genetics.
In response to the global pandemic, VITAL translated its research to COVID-19, which has a different immune response than seen in HIV. The Alliance has developed a project examining COVID-19-associated coagulopathies. The core team was originally composed of basic researchers, including Jeremy Wood, PhD, division of cardiology, who studies coagulation factors and is working to include more clinical faculty in their infectious disease division who deal with monitoring coagulation therapies. VITAL recently added Muhammad Gul, MD, and Brittany Bissell, MD, two new faculty members with experience treating COVID-19 patients. The project has the framework to allow for expansion into studies of other viruses such as influenza and hepatitis C, another major disease in Kentucky.

Dr. Garvy and Dr. Whiteheart are excited to get wheels back on the ground in Africa after COVID-19 restrictions are lifted. They are also hopeful that the "airplane" they have built will be useful for the next round of researchers.

"I hope that what we have been able to build, will be maintained over a prolonged period of time, that this will just be the beginning for our junior faculty, for fellows, for the students who are coming in, that they'll be able to use the infrastructure that we're going to need for that and build it to a greater degree," Dr. Whiteheart said. "There's still more that needs to be done, but I feel like it's moving and it's growing. And then infectious disease research at the University of Kentucky will have a great future because of this infrastructure."

Adapted from In the Loop.



RESEARCH FEATURE

PRORENIN RECEPTOR

The Prorenin Receptor and its Soluble Form Contribute to Lipid Homeostasis. Eva Gatineau, Gertrude Arthur, Audrey Poupeau, Kellea Nichols, **Brett T. Spear**, Nathan R. Shelman, **Gregory Graf**, **Ryan Temel, Frédérique Yiannikouris**. *Am J Physiol Endocrinol Metab*. 2021 Mar 1;320(3):E609-E618. doi: 10.1152/ajpendo.00135.2020. https://pubmed.ncbi.nlm.nih.gov/33459178/

Obesity is associated with several deleterious changes in lipid metabolism and alterations in hepatic lipid metabolism. Hyperlipidemia is a risk factor for cardiovascular disease and is estimated to be responsible for more than half of cardiovascular mortality. We previously identified the prorenin receptor (PRR) as a potential contributor to liver steatosis.

What they did: In this study, we investigated the contribution of PRR and its soluble form, sPRR, to lipid homeostasis. PRR-floxed male mice were treated with an adeno-associated virus with thyroxine-binding globulin promoter driven Cre to delete PRR in the liver (Liver PRR KO mice).

What they found: The deletion of PRR in liver induced hepatomegaly, hypercholesterolemia, liver inflammation and injury, and disrupted hepatic lipid homeostasis causing an increase in hepatic cholesterol and a decrease in hepatic triglycerides contents. In addition, the deletion of hepatic PRR lowered hepatic LDLR and SORT1 proteins but stimulated hepatic cholesterol synthesis (up-regulation of hepatic SREBP2 and HMG CoA-R genes) suggesting that hepatocyte sensed a shortage in cholesterol uptake and, to compensate, increased cholesterol synthesis. The measurement of total sPRR contents in fat indicated that the increase in circulating sPRR, observed in Liver PRR KO mice, originated from the adipose tissue. Mechanistic studies performed in vitro indicated that PRR contributed to triglycerides homeostasis through a PRR-PPARγ dependent mechanism whereas both PRR and sPRR contributed to hepatic cholesterol homeostasis.

Why it matters: The remarkable phenotype demonstrated the importance of liver PRR and sPRR in lipid homeostasis and highlighted a new paradigm of crosstalk between the liver and the adipose tissue.

Visit : https://www.research.uky.edu/research-priorities-initiative-cardiovascular-diseases/cardiovascular-diseases for more information.

Please visit: https://redcap.uky.edu/redcap/surveys/?s=W4WY8DEHEH to join the CV-RPA.

Ahmed Abdel-Latif
Lysophosphatidic Acid Mediates Cardiac Inflammation After Acute Infarction
National Heart Lung and Blood Institute
08/01/17-07/31/22

Doug Andres
RIT1-Mediated Protection Following Traumatic Brain Injury
National Institute of Neurological Disorders & Stroke
02/15/2018-01/31/23

RIT1 as Novel Driver Oncogene in Lung Adenocarcinoma
KY Lung Cancer Research Fund
07/01/16-06/30/21

An Innovative Therapeutic Approach to Treat Cardiomyopathy
Army Medical Research and Materiel Command
07/01/20-06/30/23

Ken Campbell
Multiscale Modeling of Inherited Cardiomyopathies and Therapeutic Interventions
National Heart Lung and Blood Institute
08/03/17-07/31/22

Length-Dependent Activation in Human Myocardium
National Heart Lung and Blood Institute
09/15/20- 07/31/24

Dual Filament Control of Myocardial Power and Hemodynamics
University of Missouri
08/25/20- 07/31/24

Computer Modeling of Myosin Binding Protein C and its Effect on Cardiac Contraction
Case Western Reserve
04/01/19-03/31/23

Thick-Filament Regulation In Human Heart Failure
Washington State University
07/01/19-06/30/22

CRCNS: Multi-Scale Models of Proprioceptive Encoding for Sensorimotor Control
Emory University
09/16/16-05/31/2022

Awards for members of Gill Heart & Vascular Institute total over $33 Mil per year!

Lisa Cassis
Center of Research in Obesity and Cardiovascular Disease COBRE Core A: Admin
Core National Institute of General Medical Sciences
09/08/08-07/31/23

Supplemental Environmental Project Compliance Assistance Tools and Services
KY Department of Environmental Protection
07/01/07-12/31/21

EPSCoR Administrative
KY Economic Development Cab
02/01/19-06/30/22

Healthy Kentucky Research Building Fit-up for Vascular Research
Office of the Director
09/23/19-10/31/21

Sex Differences in Angiotensin-Induced Vascular Diseases
National Heart Lung and Blood Institute
03/21/12-05/31/22

Alan Daugherty
University of Kentucky- Baylor College of Medicine Aortopathy Research Center
American Heart Association
04/01/18-03/31/22

JMJD3 Regulates Abdominal Aortic Aneurysm Expansion
University of Michigan
04/01/21-06/30/21

A Mechanistic Study to Elucidate the Role of Protein S in Elevating the Risk of Thrombosis in Obese, Pre-menopausal Women
Louisiana State University Health Sciences Center- New Orleans
01/15/21- 12/31/24

Determinants of Aorta Heterogeneity
National Heart Lung and Blood Institute
06/01/21-05/31/28

Macrophage Migration Inhibitory Factor and Urinary Pain
Lexington Biomedical Research Institute
07/01/19-06/30/23

Brian Delisle
Transcriptional Regulation of KCNH2
National Heart Lung and Blood Institute
03/08/19-02/28/23

Circadian Clock Regulation of Myocardial Ion Channel Expression and Function
University of Florida
09/01/20- 05/31/21

Toward Early Diagnosis of Long QT Syndrome Using Machine Learning and Molecular Dynamics Simulation of KCNH2
Loyola University
01/01/21- 12/31/21

Florin Despa
The Amylin Dyshomeostasis Hypothesis of Vascular Contributions to Cognitive Impairment and Dementia (VCID)
National Institute of Neurological Disorders & Stroke
04/01/20-03/31/25

Role of Systemic Amylin Dyshomeostasis in Alzheimer's Disease
National Institute on Aging
09/15/16- 05/31/21

Ming Gong
Targeting Timing of Food Intake as a Novel Strategy against Disruption of Blood Pressure Circadian Rhythm in Diabetes
National Heart Lung and Blood Institute
01/15/19-10/31/22

A Novel Mechanism by which Smooth Muscle BMAL1 Regulates IL-6 and Sexual Dimorphism of Abdominal
Aortic Aneurysm
National Heart Lung and Blood Institute
08/20/18-07/31/22

Internal Medicine is currently the highest funded division in the College of Medicine. .

Scott Gordon
The Role of High Density Lipoprotein Associated Protease Inhibitor Activity in Protection Against Atherosclerosis.
National Heart Lung and Blood Institute
08/20/18-07/31/21

Protease Activity in Atherosclerotic Plaque Formation and Protection by Novel HDL-targeting Protease Inhibitors
Medical Foundation
12/01/18-11/30/21

Gregory Graf
Contributions of hepatic and intestinal pathways to cholesterol excretion
National Institute Diabetes & Digestive & Kidney
09/13/17-07/31/22

The Don S. Fredrickson Lipid Research Conference
National Heart Lung and Blood Institute
09/01/20-08/31/21

Brian Jackson
Graduate Research Fellowship Program
National Science Foundation
08/01/18-07/31/23

Jing Li
Project MISSION: Developing a multicomponent, Multilevel Implementation Strategy for Syncope OptImalCare thrOugh eNgagement
National Heart Lung and Blood Institute
08/01/2017-07/31/21

RESEARCH FUNDING **CONTINUED**

Xiangan Li
Relative Adrenal Insufficiency is a Risk Factor and an Endotype for Sepsis
National Institute of General Medical Sciences
05/01/21- 04/30/26

Mechanism of Adrenal Insufficiency as A Risk Factor for Sepsis
National Institute of General Medical Sciences
09/01/17-08/31/21

Synthetic HDL a Potential Sepsis Therapy
National Institute of General Medical Sciences
11/01/15-11/30/21

Zhenyu Li
Inflammasome Activation Triggers Systemic Coagulation in Sepsis
National Heart Lung and Blood Institute
05/15/19-04/30/23

A Novel Mechanism of Immunosuppression in Sepsis: Depletion of Monocytes and Macrophages
National Institute of General Medical Sciences
09/20/19-06/30/23

Heart-Platelet Crosstalk: JNK, AFib, and Thrombogenesis
Rush University Medical Center
05/15/19-02/28/23

Analia Loria
Effect of Early Life Stress on Obesity-Induced Hypertension in Mice
National Heart Lung and Blood Institute
12/01/17-11/30/22

Fat Nerve Recording in Mice
American Physiological Society
10/01/19-07/31/21

Hong Lu
Atherosclerosis Mechanisms: Angiotensin II Production and Action
National Heart Lung and Blood Institute
05/01/18-03/31/22

Andrew Morris
Define the Twist-ATX-LPAR1 Signaling Axis in Promoting Obesity-Associated Triple Negative Breast
Cancer Army Medical Research and Materiel Command
04/15/16-04/14/21

Anniston Community Health Survey: Follow-up Study and Dioxin Analyses
National Cancer Institute
05/01/19-04/30/21

Debra Moser
Rural Intervention for Caregivers' Heart Health (RICHH)
National Institute of Nursing Research
09/26/16-06/30/21

Online Cognitive Behavioral Therapy for Depressive Symptoms in Rural Coronary Heart Disease Patients
Patient Centered Outcomes Research Institute
10/01/2020 to 09/30/2024

Gia Mudd-Martin
Corazón de la Familia (Heart of the Family)
National Institute of Nursing Research
03/02/17-01/31/22

Heart of the Family: A Cardiovascular Disease and Type 2 Diabetes Risk Reduction Intervention in High-Risk Rural Families
National Institute of Nursing Research
09/07/20- 06/30/25

Timothy Mullett
Using Biomarkers and Imaging in Fungal Regions to Improve Lung Cancer
Diagnosis Vanderbilt University
04/01/19-03/31/22

Kentucky Lung Cancer Survivorship Program
Bristol Myers Squibb Foundation Incorporated
09/01/14- 12/31/21

Mariana Nikolova-Karakashian
Ceramide and Acute Phase Proteins Elevation During Aging
National Institute on Aging
08/01/02-05/31/23

Jonathan Satin
Monomeric G-Proteins and Cardioprotection from Heart Failure
National Heart Lung and Blood Institute
09/01/17- 08/31/21

RESEARCH FUNDING **CONTINUED**

An Innovative Therapeutic Approach to Treat Cardiomyopathy
Army Medical Research and Materiel Command
07/01/20- 6/30/23

Nancy Schoenberg
Community to Clinic Navigation to Improve Diabetes Outcomes
National Institute Diabetes & Digestive & Kidney
08/01/17-07/31/22

Implementing an Evidence-Based mHealth Diet and Activity Intervention: Make Better Choices 2 for Rural Appalachians
National Heart Lung and Blood Institute
08/01/20- 04/30/25

Venkateswaran Subramanian
Calpains and Abdominal Aortic Aneurysms
National Heart Lung and Blood Institute
08/10/17-07/31/21

Ryan Temel
TRAF6 Nanoimmunotherapy to Resolve Plaque Inflammation
Mount Sinai
08/15/18-06/30/21

Targeting MicroRNA-33 To Reduce Intracranial Atherosclerosis and Other Neurovascular Hallmarks of Vascular Cognitive Impairment and Dementia
National Institute of Neurological Disorders & Stroke
04/01/19-03/31/21

Therapeutic Targeting of Metabolic microRNAs as a New Treatment Paradigm for NASH
Aalborg University
01/01/19-12/31/24

Dongfang Wang
Development of a Paracorporeal Pump-Integrated Artificial Lung for Transport of Warfighters with Acute Respiratory Distress Syndrome (ARDS)
Army Medical Research and Materiel Command
08/15/19 -08/14/22

SBIR: Development of a TransApical to Aorta Double Lumen Cannula for a Neonate LVAD
W-Z Biotech LLC
04/01/19-07/31/21

Shuxia Wang
Thrombospondin 1 in obesity associated inflammation and insulin resistance National Institute Diabetes & Digestive & Kidney
08/20/17-05/31/21

Christopher Mark Waters
Biophysical Mechanisms of Hyperoxia-Induced Lung injury
National Heart Lung and Blood Institute
04/15/20- 03/31/24

ASK1 and Ventilator-Induced Lung Injury
National Heart Lung and Blood Institute
12/15/16-11/30/21

Regulation and Function of IL33 During Neonatal RSV Infection
Louisiana
State University
05/05/18-07/31/21

Nancy Webb
Serum Amyloid A, Inflammasome Activation, and Abdominal Aortic Aneurysms
National Heart Lung and Blood Institute
01/01/17-12/31/21

NRSA T32: Pharmacology and Nutritional Sciences:
National Institute Diabetes & Digestive & Kidney
08/15/00-07/31/21

Jonathan Wenk
Force Validated Heart Valve Surgical Planning Tool
University of Arkansas
09/01/19-08/31/22

Sidney Whiteheart
Platelet Exocytosis and Endocytosis in Thrombosis and Immunity
National Heart Lung and Blood Institute
04/01/20-03/31/28

Regulatory Mechanisms of Glycoprotein Sialylation
Case Western Reserve
01/01/21- 11/30/24

Jeremy Wood
Protein S Anticoagulant Activity: Biochemical Mechanisms and Structural Studies National Heart Lung and Blood Institute
09/15/15-03/31/21

SEMINARS AND **JOURNAL CLUBS**

* Please note if these seminars are still occurring, they will be online only. Check website for details.

Cardiovascular Seminar Series
Fridays at 8:00 am
This forum brings to campus prominent external speakers and provides presentations by UK faculty to ensure their research expertise is widely known.
https://cvrc.med.uky.edu/cvrc-current-seminar-schedule

Cardiovascular Journal Club
Tuesdays at 8:00 am
Presenters in this forum discuss specific citations including basis for this publication's selection, strengths and weaknesses, from the perspective as if he/she were the original reviewer. For more information contact:
Greg Graf, Ph.D. or Ryan Temel, Ph.D.
https://cvrc.med.uky.edu/cvrc-current-journal-club-schedule

Blood Cell Journal Club
4th Friday of each month at 4:00 pm
The journal club was started a number of years ago in an effort to provide a focal point for the hemostasis community at UK. The focus is usually on platelets but they also discuss papers on Coagulation and Immune responses.
https://cvrc.med.uky.edu/cvrc-blood-cell-journal-club-2018

PUBLICATIONS
APRIL-JUNE

Ai AL, **Smyth SS**. Depression After Open Heart Surgery: Influences of Optimism, Sex, and Event-Related Medical Factors. *J Nerv Ment Dis*. 2021 Mar 1;209(3):212-217. doi: 10.1097/NMD.0000000000001285.

Ahmed T, Grigorian AY, **Messerli AW.** Management of Acute Coronary Syndrome in Patients with Liver Cirrhosis. *Am J Cardiovasc Drugs*. 2021 May 29. doi: 10.1007/s40256-021-00478-6.

Ahmed T, Lodhi SH, Anstead MI, **Messerli AW**. Cerebral paradoxical embolisation in a patient with cystic fibrosis with patent foramen ovale: a comparative review of literature. *BMJ Case Rep*. 2021 May 24;14(5):e242302. doi: 10.1136/bcr-2021-242302.

Ahn S, Esquivel JH, Davis EM, Logan JG, **Chung ML**. Cardiovascular Disease Incidence and Risk in Family Caregivers of Adults With Chronic Conditions: A Systematic Review. *J Cardiovasc Nurs*. 2021 Apr 30. doi: 10.1097/JCN.0000000000000816.

AlSiraj Y, Thatcher SE, Liang CL, Ali H, Ensor M, **Cassis LA**. Therapeutic Assessment of Combination Therapy with a Neprilysin Inhibitor and Angiotensin Type 1 Receptor Antagonist on Angiotensin II-Induced Atherosclerosis, Abdominal Aortic Aneurysms, and Hypertension. *J Pharmacol Exp Ther*. 2021 Jun;377(3):326-335. doi: 10.1124/jpet.121.000525.

Arthur G, Osborn JL, **Yiannikouris FB**. (Pro)renin receptor in the kidney: function and significance. *Am J Physiol Regul Integr Comp Physiol*. 2021 Apr 1;320(4):R377-R383. doi: 10.1152/ajpregu.00259.2020.

Aru RG, Tyagi SC, Minion DJ, Orr NT, Bounds MC. Carotid-Carotid Transposition for Zone 1 Thoracic Endovascular Aortic Repair. *Ann Vasc Surg*. 2021 May 2:S0890-5096(21)00376-9. doi: 10.1016/j.avsg.2021.04.025.

Backer CL. Regionalization Equals Excellence in Pediatric Tracheal Surgery. *Ann Thorac Surg*. 2021 May 20:S0003-4975(21)00867-5. doi: 10.1016/j.athoracsur.2021.04.087.

Ballout JA, Ahmed T, **Kolodziej AR**. COVID-19 and Heart Transplant: A Case Series and Review of the Literature. *Transplant Proc*. 2021 Feb 25:S0041-1345(21)00137-8. doi: 10.1016/j.transproceed.2021.02.015.

Baroumand AG, **Arbune AA**, Strobbe G, Keereman V, Pinborg LH, Fabricius M, Rubboli G, et al. Automated ictal EEG source imaging: A retrospective, blinded clinical validation study. *Clin Neurophysiol*. 2021 Apr 27:S1388-2457(21)00530-7. doi: 10.1016/j.clinph.2021.03.040.

Bazan VM, Taylor EM, **Gunn TM**, **Zwischenberger JB**. Overview of the bicaval dual lumen cannula. *Indian J Thorac Cardiovasc Surg*. 2021 Apr;37(Suppl 2):232-240. doi: 10.1007/s12055-020-00932-1.

Beavers CJ, Effoe SA, Dobesh PP. Selatogrel: A Novel Subcutaneous P2Y12 Inhibitor. J Cardiovasc Pharmacol. 2021 Jun 8. doi: 10.1097/FJC.0000000000001079.

Beavers CJ, Jennings DL. Use of Glycoprotein IIb/IIIa Inhibitors in the Modern Era of Acute Coronary Syndrome Management: A Survey of Cardiovascular Clinical Pharmacists. J Pharm Pract. 2021 Jun;34(3):372-377. doi: 10.1177/0897190019872386.

Browder KL, **Ather A, Pandya KA**. The effects of propofol on extracorporeal membrane oxygenation oxygenator exchange. Int J Artif Organs. 2021 May 13:391398821101600 7. doi: 10.1177/03913988211016007.

Chanzu H, Lykins J, Wigna-Kumar S, Joshi S, Pokrovskaya I, Storrie B, Pejler G, **Wood JP, Whiteheart SW**. Platelet α-granule cargo packaging and release are affected by the luminal proteoglycan, serglycin. J Thromb Haemost. 2021 Apr;19(4):1082-1095. doi: 10.1111/jth.15243.

Clouser JM, Sirrine M, **McMullen CA**, Cowley AM, Smyth SS, **Gupta V,** Williams MV, **Li J**. "Passing Out is a Serious Thing": Patient Expectations for Syncope Evaluation and Management. Patient Prefer Adherence. 2021 Jun 4;15:1213-1223. doi: 10.2147/PPA.S307186.

PUBLICATIONS **CONTINUED**

Cousin L, Bugajski A, Buck H, **Lennie T, Chung ML, Moser DK**. Race Moderates the Relationship Between Perceived Social Support and Self-care Confidence in Patients With Heart Failure. *J Cardiovasc Nurs*. 2021 Jun 4. doi: 10.1097/JCN.0000000000000822.

Deevska G, Dotson PP 2nd, Mitov M, Butterfield DA, **Nikolova-Karakashian M**. Onset of Senescence and Steatosis in Hepatocytes as a Consequence of a Shift in the Diacylglycerol/Ceramide Balance at the Plasma Membrane. *Cells*. 2021 May 21;10(6):1278. doi: 10.3390/cells10061278.

Deng P, Valentino T, Flythe MD, Moseley HNB, Leachman JR, **Morris AJ, Hennig B**. Untargeted Stable Isotope Probing of the Gut Microbiota Metabolome Using 13C-Labeled Dietary Fibers. *J Proteome Res*. 2021 Apr 8. doi: 10.1021/acs.jproteome.1c00124.

Despa F, Goldstein LB. Amylin Dyshomeostasis Hypothesis: Small Vessel-Type Ischemic Stroke in the Setting of Type-2 Diabetes. *Stroke*. 2021 May 5:STROKEAHA121034363. doi: 10.1161/STROKEAHA.121.034363.

Disney L, **Gunn T**, Klimkina O, **Keshavamurthy S**. Giant Right Atrial Myxoma Associated With Thrombocytopaenia, *Heart, Lung and Circ*, 2021, https://doi.org/10.1016/j.hlc.2021.05.098.

Dittmer SJ, **Davenport DL**, Oyler DR, Bernard AC. The Influence of the Opioid Epidemic on Firearm Violence in Kentucky Counties. *J Surg Res*. 2021 Apr 6;264:186-193. doi: 10.1016/j.jss.2021.02.011.

Elbadawi A, Elgendy IY, Dang A, Megaly M, Goel SS, Sandoval Y, Shahin HI, **Abdel-Latif AK**, Banerjee S, Brilakis ES. Hospital Volume and Outcomes of Coronary Atherectomy. *Am J Cardiol*. 2021 May 1;146:140-141. doi: 10.1016/j.amjcard.2021.02.004.

Etaee F, Elayi CS, Catanzarro J, **Delisle B**, **Ogunbayo G**, Di Biase L, Natale A, Darrat Y. Gender Associated Disparities in Atrioventricular Nodal Reentrant Tachycardia: Review Article. *J Cardiovasc Electrophysiol*. 2021 May 9. doi: 10.1111/jce.15078.

Evans MA, Stephens EH, Lavin JM, Chun Y, Maurrasse S, **Backer CL**. Use of a Rigid Bronchoscope as the Sole Prebypass Airway During Pediatric Tracheal Tumor Resection: A Case Report. *A A Pract*. 2021 Feb;15(2):e01399. doi: 10.1213/XAA.0000000000001399.

Expert Panels on Cardiac Imaging and Neurological Imaging, Kligerman SJ, Bykowski J, Hurwitz Koweek LM, Policeni B, Ghoshhajra BB, Brown MD, Davis AM, Dibble EH, Johnson TV, Khosa F, Ledbetter LN, **Leung SW**, et al. ACR Appropriateness Criteria® Syncope. *J Am Coll Radiol*. 2021 May;18(5S):S229-S238. doi: 10.1016/j.jacr.2021.02.021.

Ferraris VA. Commentary: Benefits of SGLT2 inhibition in heart failure: A bellwether for importance of other metabolic pathways. *J Thorac Cardiovasc Surg*. 2021 Mar 27:S0022-5223(21)00554-7. doi: 10.1016/j.jtcvs.2021.03.073.

Ferraris VA. Commentary: Breaking the perioperative glucose control barrier is like breaking the sound barrier-it takes a team! *J Thorac Cardiovasc Surg*. 2021 Jun 21:S0022-5223(21)00893-X. doi: 10.1016/j.jtcvs.2021.06.004.

Ferraris VA. Commentary: Postoperative oropharyngeal dysphagia as a target for limiting cardiac surgical complications-more work to be done. *J Thorac Cardiovasc Surg*. 2021 Mar 9:S0022-5223(21)00430-X. doi: 10.1016/j.jtcvs.2021.03.010.

Ferraris VA. Commentary: Preventing postoperative acute kidney injury starts with identifying actionable intermediates? *J Thorac Cardiovasc Surg*. 2021 Apr 20:S0022-5223(21)00709-1. doi: 10.1016/j.jtcvs.2021.04.036.

Ferraris VA. Why Is MIDCAB the Least Likely Option for Coronary Revascularization? *Ann Thorac Surg*. 2021 May;111(5):1484-1485. doi: 10.1016/j.athoracsur.2020.07.086.

PUBLICATIONS **CONTINUED**

Gunn TM, Malyala RSR, Gurley JC, Keshavamurthy S. Extracorporeal Life Support and Mechanical Circulatory Support in Out-of-Hospital Cardiac Arrest and Refractory Cardiogenic Shock. *Interv Cardiol Clin*. 2021 Apr;10(2):195-205. doi: 10.1016/j.iccl.2020.12.006.

Hansen A, Moloney ME, **Li J**, Chavan NR. Preterm Birth Prevention in Appalachia: Restructuring Prenatal Care to Address Rural Health Disparities and Establish Perinatal Health Equity. *Health Equity*. 2021 Apr 21;5(1):203-209. doi: 10.1089/heq.2020.0064. eCollection 2021.

Heo S, **Moser DK**, **Lennie TA**, Kim J, Turrise S, Troyan PJ, Kang J, Jones HJ. Self-care strategies and interventions needed in patients with heart failure: from patient perspectives-a qualitative study. *Eur J Cardiovasc Nurs*. 2021 May 19:zvaa033. doi: 10.1093/eurjcn/zvaa033.

Hill L, Lambrinou E, **Moser DK**, Beattie JM. The COVID-19 pandemic: challenges in providing supportive care to those with cardiovascular disease in a time of plague. *Curr Opin Support Palliat Care*. 2021 Jun 1;15(2):147-153. doi: 10.1097/SPC.0000000000000552.

Homme RP, Sandhu HS, George AK, **Tyagi SC**, Singh M. Sustained Inhibition of NF-κB Activity Mitigates Retinal Vasculopathy in Diabetes. *Am J Pathol*. 2021 May;191(5):947-964. doi: 10.1016/j.ajpath.2021.01.016.

Hou T, Su W, **Duncan MJ,** Olga VA, Guo Z, **Gong MC**. Time-restricted feeding protects the blood pressure circadian rhythm in diabetic mice. *Proc Natl Acad Sci U S A*. 2021 Jun 22;118(25):e2015873118. doi: 10.1073/pnas.2015873118.

Johnson MC Jr, Liu H, Sorra J, Brock J, Gass B, **Li J**, Clouser JM, Hirschman K, Carpenter D, Nguyen HQ, Williams MV. Development and psychometric properties of surveys to assess provider perspectives on the barriers and facilitators of effective care transitions. *BMC Health Serv Res*. 2021 May 20;21(1):478. doi: 10.1186/s12913-021-06369-5.

Keshavamurthy S, Rodgers-Fischl P. Donation after circulatory death (DCD)-lung procurement. *Indian J Thorac Cardiovasc Surg*. 2021 Apr 1:1-8. doi: 10.1007/s12055-021-01156-7.

Kukida M, Sawada H, Ohno-Urabe S, Howatt DA, Moorleghen JJ, Poglitsch M, **Daugherty A**, **Lu HS**. Effects of Endogenous Angiotensin II on Abdominal Aortic Aneurysms and Atherosclerosis in Angiotensin II-Infused Mice. *J Am Heart Assoc*. 2021 Apr 23:e020467. doi: 10.1161/JAHA.121.020467.

Kolodziej AR, Vaidya GN, Reddy N, Birks EJ. Mechanical circulatory support in pre and postheart transplant period. *Curr Opin Organ Transplant*. 2021 Jun 1;26(3):273-281. doi: 10.1097/MOT.0000000000000881.

Konstantinov IE, **Backer CL**, Yerebakan C, Alsoufi B. At the forefront of congenital cardiothoracic surgery: 2020-2021. *J Thorac Cardiovasc Surg*. 2021 Apr 20:S0022-5223(21)00667-X. doi: 10.1016/j.jtcvs.2021.03.108.

Korn D, Bobrowski T, Li M, Kebede Y, Wang P, Owen P, **Vaidya G**, *et al*.. COVID-KOP: integrating emerging COVID-19 data with the ROBOKOP database. *Bioinformatics*. 2021 May 1;37(4):586-587. doi: 10.1093/bioinformatics/btaa718.

Kumar A, Avishay DM, Jones CR, Shaikh JD, Kaur R, Aljadah M, Kichloo A, Shiwalkar N, **Keshavamurthy S**. Sudden cardiac death: epidemiology, pathogenesis and management. *Rev Cardiovasc Med*. 2021 Mar 30;22(1):147-158. doi: 10.31083/j.rcm.2021.01.207.

Lee KS, **Moser DK,** Park JH, **Lennie TA**. The association of deficiencies of water-soluble vitamin intake with health-related quality of life and prognosis in patients with heart failure. *Qual Life Res*. 2021 Apr;30(4):1183-1190. doi: 10.1007/s11136-020-02725-w.

Leung SW, **Charnigo RJ**, Ratajczak T, Abo-Aly M, Shokri E, **Abdel-Latif A**, **Wenk JF.** End-Systolic Circumferential Strain Derived From Cardiac Magnetic Resonance Feature-Tracking as a Predictor of Functional Recovery in Patients With ST-Segment Elevation Myocardial Infarction. *J Magn Reson Imaging*. 2021 Jun 10. doi: 10.1002/

PUBLICATIONS **CONTINUED**

Lin CY, Dracup K, Pelter MM, **Biddle MJ**, **Moser DK**. Association of psychological distress with reasons for delay in seeking medical care in rural patients with worsening heart failure symptoms. *J Rural Health*. 2021 Mar 30. doi: 10.1111/jrh.12573.

Lin CY, Hammash M, **Mudd-Martin G**, **Biddle MJ,** Dignan M, **Moser DK**. Older and younger patients' perceptions, evaluations, and responses to worsening heart failure symptoms. *Heart Lung*. 2021 Jun 3;50(5):640-647. doi: 10.1016/j.hrtlng.2021.05.005.

Lu HS, Owens AP 3rd, Liu B, **Daugherty A**. Illuminating the Importance of Studying Interventions on the Propagation Phase of Experimental Mouse Abdominal Aortic Aneurysms. *Arterioscler Thromb Vasc Biol*. 2021 Apr;41(4):1518-1520. doi: 10.1161/ATVBAHA.121.316070.

Lubert AM, Alsaied T, Palermo JJ, Anwar N, Urbina EM, Brown NM, Alexander C, et al. (**Leventhal AR)**. Fontan-Associated Dyslipidemia. *J Am Heart Assoc*. 2021 Mar 31:e019578. doi: 10.1161/JAHA.120.019578.

Luc JGY, Ad N, Nguyen TC; COVID-19 North American Cardiac Surgery Survey Working Group Collaborators (**Sekela ME**). Cardiac surgeons' concerns, perceptions, and responses during the COVID-19 pandemic. *J Card Surg*. 2021 Jun 12. doi: 10.1111/jocs.15681.

Luo T, Liu H, Chen B, Liu H, **Abdel-Latif A,** Kitakaze M, Wang X, *et al*. A novel role of claudin-5 in prevention of mitochondrial fission against ischemic/hypoxic stress in cardiomyocytes. *Can J Cardiol*. 2021 Apr 7:S0828-282X(21)00174-4. doi: 10.1016/j.cjca.2021.03.021.

McVeigh ED, Batool A, Stromberg A, **Abdel-Latif A**, Kazzaz NM. Cardiovascular complications of systemic lupus erythematosus: impact of risk factors and therapeutic efficacy-a tertiary centre experience in an Appalachian state. *Lupus Sci Med*. 2021 May;8(1):e000467. doi: 10.1136/lupus-2020-000467.

Madabhushi VV, Bautista RF Jr, **Davenport DL**, Evers BM, Judge JM, Bhakta AS. Impact of the Affordable Care Act Medicaid Expansion on Reimbursement in Emergency General Surgery. *J Gastrointest Surg*. 2021 May 7. doi: 10.1007/s11605-021-05028-8.

Madabhushi V, **Davenport D**, Jones S, Khoudoud SA, **Orr N**, **Minion D**, **Endean E**, **Tyagi S**. Revascularization of Intermittent Claudicants Leads to More Chronic Limb Threatening Ischemia and Higher Amputation Rates. *J Vasc Surg*. 2021 Mar 25:S0741-5214(21)00465-1. doi: 10.1016/j.jvs.2021.02.045.

Messerli AW, Ahmed T. For Prediction of "No-Reflow," How Precise is PRECISE-DAPT? *Angiology*. 2021 May 21:33197211018356. doi: 10.1177/00033197211018356.

Moloney ME, Hansen A, Cockerham-Morris CT, **Li J,** Chavan NR. Appalachian Women's perspectives on preterm birth and transvaginal ultrasound cervical length screening: Implications for addressing disparities in preterm birth. *Healthc (Amst)*. 2021 Jun 4;9(3):100558. doi: 10.1016/j.hjdsi.2021.100558.

Muniappan L, Okuyama M, Javidan A, Thiagarajan D, Jiang W, Moorleghen JJ, Yang L, Balakrishnan A, Howatt DA, Uchida HA, Saido TC, **Subramanian V.** Inducible Depletion of Calpain-2 Mitigates Abdominal Aortic Aneurysm in Mice. *Arterioscler Thromb Vasc Biol*. 2021 May 5;41(5):1694-1709. doi: 10.1161/ATVBAHA.120.315546.

Ohno-Urabe S, Kukida M, Franklin MK, Katsumata Y, Su W, **Gong MC**, **Lu HS**, **Daugherty A**, Sawada H. Authentication of In Situ Measurements for Thoracic Aortic Aneurysms in Mice. *Arterioscler Thromb Vasc Bio*l. 2021 Apr 1:ATVBAHA121315983. doi: 10.1161/ATVBAHA.121.315983.

Okuyama M, Jiang W, Yang L, **Subramanian V**. Mst1/2 Kinases Inhibitor, XMU-MP-1, Attenuates Angiotensin II-Induced Ascending Aortic Expansion in Hypercholesterolemic Mice. *Circ Rep*. 2021 Apr 20;3(5):259-266. doi: 10.1253/circrep.CR-20-0104.

PUBLICATIONS **CONTINUED**

Rasicci DV, Kirkland O, Moonschi FH, Wood NB, Szczesna-Cordary D, Previs MJ, **Wenk JF**, **Campbell KS**, Yengo CM. Impact of regulatory light chain mutation K104E on the ATPase and motor properties of cardiac myosin. *J Gen Physiol*. 2021 Jul 5;153(7):e202012811. doi: 10.1085/jgp.202012811.

Saha SP, Banks MA, Whayne TF. Managing Cardiovascular Risk Factors without Medications: What is the Evidence? *Cardiovasc Hematol Agents Med Chem*. 2021;19(1):8-16. doi: 10.2174/1871525718666200518093418.

Samsky MD, Milano CA, Pamboukian S, Slaughter MS, **Birks E**, Boyce S, Najjar SS, et al. The Impact of Adverse Events on Functional Capacity and Quality of Life After HeartWare Ventricular Assist Device Implantation. *ASAIO J*. 2021 Apr 21. doi: 10.1097/MAT.0000000000001378.

Sandeep B, Vicari FA, **Backer CL**, Eltayeb O. Ectopia Cordis Sternal Cleft Repair With Mandibular Distractors: A Follow-Up Case Report. *World J Pediatr Congenit Heart Surg*. 2021 May 6:2150135120978951. doi: 10.1177/2150135120978951.

Sinner GJ, Annabathula R, Viquez K, **Alnabelsi TS**, **Leung SW**. Infective endocarditis in pregnancy from 2009 to 2019: the consequences of injection drug use. *Infect Dis (Lond)*. 2021 Aug;53(8):633-639. doi: 10.1080/23744235.2021.1912821.

Schoenberg NE, Bowling B, Cardarelli K, Feltner F, **Mudd-Martin G**, Surratt HL, Kern PA. The Community Leadership Institute of Kentucky (CLIK): A Collaborative Workforce and Leadership Development Program. *Prog Community Health Partnersh*. 2021;15(1):95-105. doi: 10.1353/cpr.2021.0009.

Slade E, Irvin MR, Xie K, Arnett DK, Claas SA, Kind T, Fardo DW, **Graf GA**. Age and sex are associated with the plasma lipidome: findings from the GOLDN study. *Lipids Health Dis*. 2021 Apr 3;20(1):30. doi: 10.1186/s12944-021-01456-2.

Vander Roest AS, Liu C, Morck MM, Kooiker KB, Jung G, Song D, Dawood A, el al (**Campbell KS**). Hypertrophic cardiomyopathy β-cardiac myosin mutation (P710R) leads to hypercontractility by disrupting super relaxed state. Proc Natl Acad Sci U S A. 2021 Jun 15;118(24):e2025030118. doi: 10.1073/pnas.2025030118.

Vaidya GN, Patel JK, Kittleson M, Chang DH, Kransdorf E, Geft D, Czer L, *et al*. Intermediate-term Outcomes of Heart Transplantation for Cardiac Amyloidosis in the Current Era. Clin Transplant. 2021 Apr 7:e14308. doi: 10.1111/ctr.14308.

Vitori TK, Frazier S, **Chung ML**, **Mudd-Martin G**, **Moser DK**. The Psychometric Properties of the Brief Symptom Inventory Hostility and Anxiety Subscales in a Prison Population. *J Nurs Meas*. 2021 Apr 16:JNM-D-19-00094. doi: 10.1891/JNM-D-19-00094.

Webster G, Balmert LC, Patel AB, Kociolek LK, Gevitz M, Olson R, Chaouki AS, *et al* (**Backer C**). Surveillance Cultures and Infection in 230 Pacemaker and Defibrillator Generator Changes in Pediatric and Adult Congenital Patients. *World J Pediatr Congenit Heart Surg*. 2021 May;12(3):331-336. doi: 10.1177/2150135120988631.

Williams K, Segard A, **Graf GA**. Sitosterolemia: Twenty Years of Discovery of the Function of ABCG5ABCG8. *Int J Mol Sci*. 2021 Mar 5;22(5):2641. doi: 10.3390/ijms22052641.

Williams RG, **George BC**, Bohnen JD, Dunnington GL, Fryer JP, Klamen DL, **Meyerson SL**, et al. A Proposed Blueprint for Operative Performance Training, Assessment, and Certification. *Ann Surg*. 2021 Apr 1;273(4):701-708. doi: 10.1097/SLA.0000000000004467.

Wood JP. Factor VIIa is not just a factor X activator. Blood. 2021 Jun 17;137(24):3324-3325. doi: 10.1182/blood.2021010839.

Zhang Y, Cui J, Zhang G, Wu C, **Abdel-Latif A**, Smyth SS, Shiroishi T, et al. Inflammasome activation promotes venous thrombosis through pyroptosis. *Blood Adv*. 2021 Jun 22;5(12):2619-2623. doi: 10.1182/bloodadvances.2020003041.

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UPCOMING 2021 EVENTS

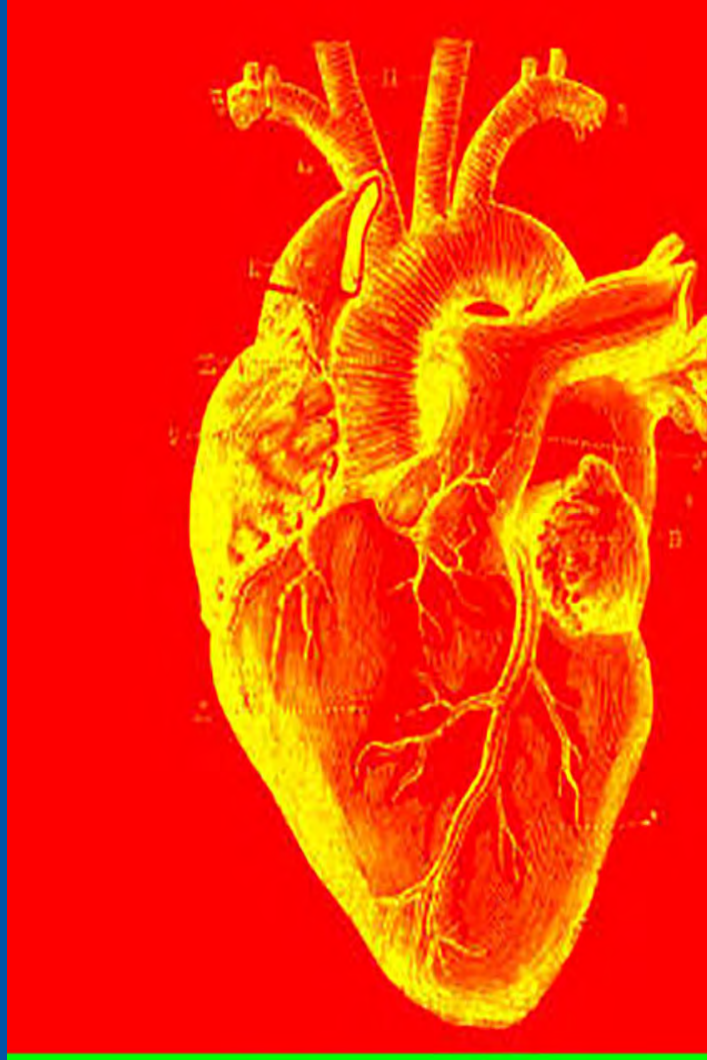
Lipid Conference- Sept 9-11

CVRC Research Day- Sept 10

KY-ACC- Sept 11

Flower and Horan Lecture- Sept 17

Cardiooncology Symposium- Oct 16



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