



# GOOD NEWS!

Wake Forest School of Medicine Cardiovascular Science Center

Spring 2021



## THE POINTER NEUROVASCULAR ANCILLARY STUDY



Tina Brinkley, PhD



Hossam Shaltout, PhD

In April 2020 **Tina Brinkley, PhD** and **Hossam Shaltout, PhD** were awarded a \$10.1 million 5-year grant from the National Institutes on Aging to study neurovascular outcomes in the The U.S. study to PrOtect brain health through lifestyle INTERvention to Reduce risk (U.S. POINTER). U.S. POINTER is an ongoing multi-center randomized clinical trial designed to investigate whether randomization to one of two lifestyle interventions that differ in format and intensity alters cognitive trajectory over 2 years in 2,000 older adults aged 60-79 years who are cognitively normal but at increased risk for dementia due to factors such as first degree family history of memory impairment, sedentary lifestyle, poor diet, race/ethnicity, and suboptimum cardiometabolic health.

The POINTER Neurovascular Ancillary study, referred to as POINTER-NV, will comprehensively assess autonomic function, cerebral autoregulation, and vascular structure and function by evaluating aortic, carotid, and cerebral hemodynamics using complementary techniques (i.e., ultrasound, tonometry, and continuous blood pressure and heart rate monitoring) under a variety of conditions (i.e., at rest, during posture changes, and during carbon dioxide inhalation). These neurovascular outcomes will be assessed at baseline, Month 12 and Month 24 in 500 parent trial participants (~250 per intervention arm) at up to 5 clinical sites. The primary aim is to assess the effects of the POINTER lifestyle intervention on cerebral autoregulation and baroreflex sensitivity. Intervention effects on aortic stiffness, carotid stiffness, and cerebral vasomotor reactivity will also be assessed. In addition, POINTER-NV will examine whether these neurovascular outcomes are associated with cognition (assessed every 6 months in the parent study) and brain structure/function (assessed every 1-2 years in the NIA-funded POINTER Imaging ancillary study).

The results of this innovative study could provide critical insight about preclinical changes that compromise brain perfusion, and may identify an effective strategy for improving neurovascular function, which could have important consequences for preventing Alzheimer's disease and related dementias. Key collaborators at Wake include **Aarti Sarwal, MD** and **Charles Tegeler, MD** from Neurology, **Dalane Kitzman, MD** from Cardiology, **Laura Baker, PhD** from Geriatrics, and **Iris Leng, PhD** and **Mark Espeland, PhD** from Public Health Sciences. External collaborators include **Gary Mitchell, MD** (Cardiovascular Engineering, Inc., Norwood, MA) and **Jurgen Claassen, MD, PhD** (Radboud University, The Netherlands).

## FUNDING

During the months of December 2020–March 2021, CVSC members were awarded a total of **28** new grants. **20** different departments were represented in this count and **15** CVSC members served as PIs of these projects. Below we highlight a few of these awards.



**Dr. Xuewei Zhu** is the latest recipient of a CVSC Pilot Award of \$20,000 over 1 year. The title of the project is, "PUFA Desaturation, NAD+ Metabolism, and Microphage NLRP3 Inflammasome."



**Drs. David Soto-Pantoja**, Co-Investigator, and Multi-PIs (Drs. Miller, Lance David; Votanopoulos, Konstantinos) received an NIH/NCI award in the amount of \$50,170 over 1 year for their project titled, "Tumor Organoid-Mediated Drug Testing and Clonality Analysis in Peritoneal Surface Disease of Intestinal Origin."



**Dr. Ashish Khanna** was awarded a WFSM Cardiovascular Sciences Center Pilot Award in the amount of \$30,000 over 1 year. The title of his project is, "Association of Baseline and Post-Treatment Serum Renin Level and Clinical Outcomes in Patients with Septic Shock."

Co-Is on the project are **Drs. Mark Chappell** and **Christopher Schaich** from the Hypertension Center and involved a team of collaborators from the VICTAS trial group.



**Drs. Nicholette Allred** and **Donald Bowden** received \$651,974 over 5 years in funding from the National Institute of Diabetes and Digestive and Kidney



Disease for their project titled, "Genetic and Epidemiological Predictors of Glucose Homeostasis Measures."



**Dr. Charles Tegeler** (PI), received funding from University Hospitals of Cleveland for his pilot study titled, "Imaging and Serologic Biomarkers of Treatment-Related Carotid Artery Inflammation in Head and Neck Cancer Patients (Radiation-Related Carotid Injury

Study)" in the amount of \$14,920.



**Dr. Liliya Yamaleyeva** was awarded a WFSM Cardiovascular Sciences Center Pilot Award in the amount of \$30,000 over 1 year. The title of her project is, "Gut Microbiome Dysbiosis and Arterial Stiffness in Response to Simulated Weightlessness." Co-Is on this

project are **Drs. Katherine Loree Cook, Nildris Cruz-Diaz,** and **Brian Westwood, MS**

## AUSTIN'S DATA TIPS AND TOOLS



### Power Analysis

In statistics, power is the probability that a statistical test correctly rejects the null hypothesis. This can also be thought of as the probability of detecting a true positive result. The more power the better. It is important to consider power before conducting any experiment or collecting data for a sample. Power analysis can be used to determine the minimum sample size needed to achieve a desired result. In most cases power analysis is used to determine sample size for an experiment. This done by supplying a desired significance level, effect size, and statistical power. However, these three parameters can be estimated if the sample size already known. How effect size is measured is dependent on what test you will be conducting. In addition, power curves can be used to visualize how sample size effects the power of the experiment.

A common application of power analysis is Student's t Test Power analysis, where the experiment is comparing means from two samples, but power analysis can be extended to discrete outcomes and can even accommodate repeated measures designs. Power analysis can be conducted in SAS using the POWER procedure. If you have any questions how about this approach can applied to your data don't hesitate to contact me!

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## INVITED PRESENTATIONS



**Dr. Patricia Gallagher** gave an invited talk at the educational session of the Southeastern Regional Fruit and Vegetable Conference, as a result of her research on the beneficial effects of muscadine grape extracts on cardiovascular and cancer disease progression.



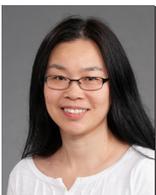
**Dr. Katherine Cook** gave an oral presentation on December 10th for the American Society for Matrix Biology: Matrix Remodeling in Metabolic Health and Disease. The webinar was titled *Early-life dietary exposures result in persistent gut microbiome alterations affecting visceral fat fibrosis and inflammation lasting into adulthood.*



**Dr. Kunal Sangal** has been invited to speak at the Global Summit on Cardiology and Cardiovascular Medicine. The conference is scheduled for October 21-23, 2021 and will be held in Valencia, Spain. Dr. Sangal will present his research on contrast and kidney function or refractory angina.



**Dr. Yashashwi Pokharel's** abstract titled, "Community-Centric Study to Mitigate Cardiovascular Disease in Rural Nepal: The Non-Communicable Disease in Nepal Study," has been accepted at the American College of Cardiology Scientific Sessions. The conference is currently scheduled for May 15-17, 2021 in Atlanta, Georgia and will offer both in-person attendance as well as the option to attend virtually.



**Dr. Xuewei Zhu** has been invited by the Society for Leukocyte Biology (SLB) to give a talk April 29th in the 2021 SLB Special Interest Group Session-Innate Immune Memory. The title of her talk is "Regulation of the NLRP3 inflammasome by pyruvate oxidation." Dr. Zhu has also been invited by Society for Leukocyte Biology (SLB) to give a talk July 29th in the 2021 SLB Conference-Immunometabolism II Session. The title of her talk is "The impact of G6P transporter SLC37A2-mediated glucose metabolism on macrophage inflammation and atherosclerosis".

## PUBLICATIONS

Between the months of January-March 2021, Cardiovascular Sciences Center members have published an astounding **84** manuscripts. Of these, **19** were CVSC first author publications.

Aladin A, Soliman E, **Kitzman D**, Dardari Z, Rasool SH, **Yeboah J**, Budoff MJ, Psaty BM, Ouyang P, Polak JF, Blumenthal RS, McEvoy, JW, Gandhi SK, **Herrington DM** *Comparison of the Relation of Carotid Intima-Media Thickness with Incident Heart Failure with Reduced Versus Preserved Ejection Fraction (From the Multi-Ethnic Study of Atherosclerosis [MESA])* The American Journal of Cardiology

**Brinkley TE**, Semba RD, **Kritchevsky SB**, Houston DK *Dietary protein intake and circulating advanced glycation end product/receptor for advanced glycation end product concentrations in the Health, Aging, and Body Composition Study.* American Journal of Clinical Nutrition

German CA, **Shapiro MD** *Statins and coronary artery calcium: What's the score?* Atherosclerosis

\*Pandey A, **Kitzman D** *Searching for the Optimal Exercise Training Regimen in Heart Failure with Preserved Ejection Fraction.* JAMA

\*This article received national press

# AWARDS AND ACCOMPLISHMENTS



Congratulations to **Jessica Mackert**, a graduate student mentored by **Drs. Ann Tallant** and **Patricia Gallagher**, for winning the Student Basic Science Silver award out of over 50

submissions in total this year for her project titled, Muscadine Grape Extract Inhibits Trastuzumab-Sensitive and -Resistant HER2 Positive Breast Cancer And Reduces Trastuzumab-Induced Cardiotoxicity.



**Dr. David Soto-Pantoja** received 3rd runner up in the Research Scientist Category at the 6th Annual Immuno-Oncology Young Investigators' Forum. This award was for demonstrating excellence, leadership, and a dedicated commitment to the field of immune-oncology research.



**Dr. Patricia Gallagher** was listed in Forbes Magazine as one of the top individual fundraisers for the North Carolina Leukemia and Lymphoma Society.



**Dr. Jennifer Krall** has been selected to receive a 2021 ATS (American Thoracic Society) International Conference Abstract Award in the amount of \$500. The title of her abstract is, "Leukocyte Kinetics in Acute Lung Injury (ALI)-Associated Skeletal Muscle Wasting and Recovery." Her abstract was selected based on the quality, as reviewed by the Assembly on Critical Care Program Committee Chair.



**Dr. Dalane Kitzman** has been selected as the recipient of the 2021 Michael L. Pollock Established Investigator Award in recognition of his outstanding work in the field of cardiac rehabilitation. This award, which is given on behalf of the American Association of Cardiovascular and

Pulmonary Rehabilitation, is presented to an individual who has made significant advances in the field of cardiac rehabilitation through his/her research and scholarly contributions and has earned national prominence in his/her field through contributions in contemporary research and/or education. Dr. Kitzman will be recognized for this award at the 36th AACVPR annual meeting in San Antonio, Texas this October.



**Drs. Andrew South, Debra Diz, and Mark Chappell** have won the AJP-Heart Circulation 2020 Impact Award for their article titled, "COVID-19, ACE2, and the

Cardiovascular Consequences." The article was cited 288 times in 2020 and ranked in the top 5% of all research outputs ever tracked (>17 million). The article will be announced as the winner of the award during the AJP-Heart and Circulation Meet the Editor virtual event at Experimental Biology 2021 on Thursday, April 29 at 12:00 PM EDT.



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