

# GOOD NEWS!

Wake Forest University School of Medicine Cardiovascular Sciences Center

Winter 2022

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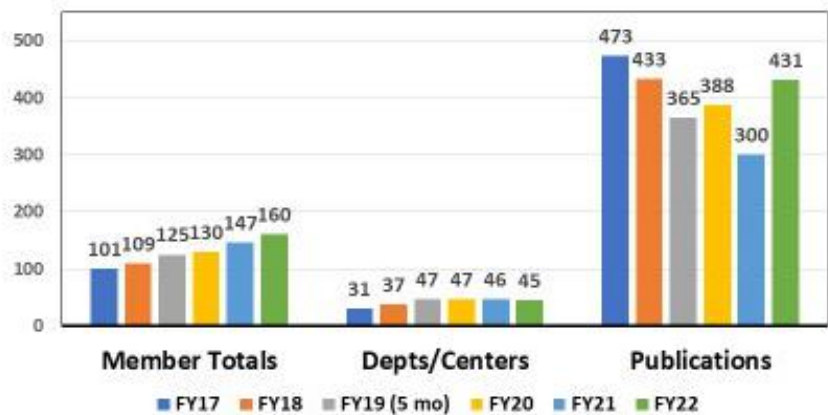


## 2022 CENTER ANNUAL REPORT HIGHLIGHTS

**Membership, Publication and Extramural Funding Activities:** We congratulate members on continued successes and highlight below the many sustained achievements! Membership is steadily increasing and the data indicate a gratifyingly dramatic rebound in submitted applications, which we expect will be followed by a similar bump in actual funded awards in the coming year(s).

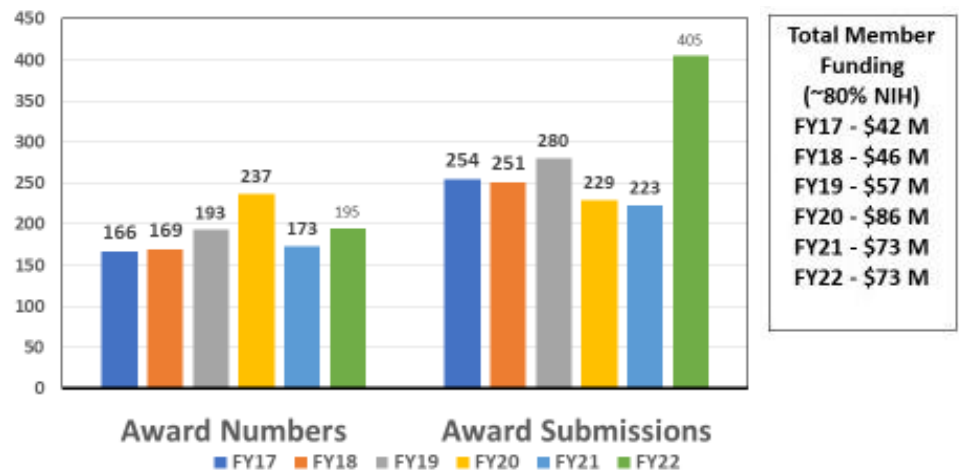
### CVSC: Membership, Departments and Centers Represented, Publications

Steadily increasing Membership averaging ~2.7 Publications per month in 2022



### CVSC: Membership Funding Metrics

Active Awards and Submission Activity



## 2022 CENTER ANNUAL REPORT HIGHLIGHTS *continued*

**Pilot Awards: Did you Know?** In 2022 we transitioned away from using the CTSI common solicitation and deadline strategy and adopted a separate solicitation and deadline in the Spring for the CVSC Pilot awards that was promoted in our emails and *GoodNews* newsletter. As a result, we received more than twice the number of applications as in prior years and the survey results indicated greater awareness of the program. To maintain increased awareness, we intend to continue this approach in 2023. In addition, we will dedicate an article in an upcoming issue of *GoodNews* to the pilot funding mechanism including past recipients. We highly encourage projects with collaborating investigators across the Winston-Salem and Greater Charlotte regions. Please be on the lookout for these updates!

**\$393,000** Total CVSC Pilot investment (as of 8/2022) *Women faculty represent 58% and URM faculty represent 26% of the CVSC Pilots funded)*

**\$4.8 M** Total extramural funding from Award recipients (as of 8/2022)

**12:1** Ratio of subsequent funding/investment

**50%** At least 8 grants have been submitted with a total of 4 awarded for a 50% success rate

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## AUSTIN'S DATA, TIPS AND TOOLS



### The Importance of Checking Data Quality

The importance of checking the quality of your data is an essential part of your research/analytic project. Data quality can be defined in many different ways and is context specific but it can be described by one question. Can this data be

analyzed in its current state? This is one of the questions I ask myself at the beginning of every analysis and usually leads to more specific questions like, is a significant proportion of my data missing? Is the (non-missing) data recorded in a uniform manner? For example, date and time data can often be in different formats if recorded manually. Fixing a problem like this often called data harmonization and can take a very long time to fix on the back end if not

properly considered during data collection. Addressing questions like these during the data collection stage will help the data analysis stage be more efficient. This will also shape your expectations in the results and greatly influence the analytic approach of the project. If pulling data from the EMR, it would be wise to form a template defining what information/variables to record and the format it should be recorded in. I've found that doing this helps you get to know your data very well. As many analyst say "If you put garbage data in, you will get garbage data out."

Thanks for reading this winter edition of data tools and tips. Don't hesitate to reach out to me if you have any questions or would like to talk more.

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## FUNDING

During the months of September- December, CVSC members were awarded 11 new grants. Below we highlight some of these awards.



**Dr. Sarah Cilvik** awarded an R56 from NHLBI for the project titled "Developmental Origins of Cardiovascular Disease in Offspring from Non-human Primate Pregnancies at Advanced Maternal Age" from 9/2022-8/2023. Co-investigators include **Drs. Kylie**

**Kavanagh** (Pathology-Comparative Medicine), **Matt Jorgensen** (Pathology-Comparative Medicine), **Giselle Melendez** (Cardiology), **Carmen Kiper** (Pediatrics-Cardiology), **Joshua Nitsche** (Maternal Fetal Medicine), and **Andrew South** (Pediatrics-Nephrology).



**Dr. Dhanendra Tomar** received a research grant from the Harold S. Geneen Charitable Trust Awards Program for Coronary Heart Disease Research titled "Mitochondrial protein quality control and calcium signaling in myocardial ischemia-reperfusion injury."

**Dr. Ashlesha Kadam**, a postdoctoral fellow in Dr. Dhanendra Tomar's lab received a postdoctoral fellowship grant from the American Heart Association titled "Mitochondrial inter-membrane space protein quality control in Barth syndrome-associated cardiomyopathy."



**Dr. Michael Bancks** was selected for an American Diabetes Association's Precision Medicine and Diabetes Innovative Clinical or Translational Science Award Research Program. The is titled "Individualized risk prediction for type 2 diabetes, prediabetes subgrouping, and impact of lifestyle and therapeutic preventive interventions". Co-Investigators include **Drs. Byron Jaeger, Ramon Casanova,** and **Brian Wells** all of Wake Forest University Public Health Sciences.

The Scientific Advisory Committee of the Heineman-Robicsek Foundation received 10 research proposals in 2022 for consideration for funding, only awarding funding for two of those proposals through the James N. Heineman Endowment. Dr. Priyesh Patel's proposal "Impact of Mobile Integrated Health on Acute Care Utilization after Hospitalization for Heart Failure" was one of the two selected for funding by the James H. Heineman Endowment for the amount of \$19,000.

## CAREER CORNER



**Dr. TanYa Gwathmey**



**Dr. Justin Moore**

**CVSC Focus on Career Development and Diversity:** We use our training programs as pathways into further training and WFUSOM faculty positions. The CV Research T32 serves as a pipeline for faculty recruitment. In addition, our undergraduate research training programs Excellence in Cardiovascular Sciences (EICS, NHLBI funded 30 years) summer program and Enhancing UnderGraduate Education and Research in AGing to Eliminate Health Disparities (ENGAGED, NIA funded 4 years) academic year and summer program continue to serve as pathways for diversity in our masters and PhD programs. Faculty in CVSC are involved in CTSI, WIMS and Office of Faculty Affairs professional and research career development and mentoring programs for early career faculty. A new program funded by NIDDK for high school students developed by **Drs. TanYa Gwathmey and Justin Moore** began this year. In 2022, there were 9 training grants with CVSC member as PI/PD and 2 faculty K awards with CVSC faculty as mentor/mentee for a total annual NIH funding of \$2,094,420.

## INVITED PRESENTATIONS

**Drs. Cheping Cheng and Heng-Jie Cheng's** lab had 5 abstracts presented at the 2022 AHA Scientific Sessions in Chicago, IL and published in *Circulation* 2022;146. A few are highlighted below:



**Dr. Heng-Jie Cheng** was the first author and presenter for the following:

- *Upregulation of Cardiac Beta3-Adrenergic Receptor-Activated INOS Uncoupling Promotes Diabetic Cardiomyopathy in Type II Diabetic Mice: Role of Oxidant Stress.*

*Circulation.* 2022;146:A9608. **Heng-Jie Cheng**, Jing Cao, Xiaoqiang Sun, **David X.M. Zhao**, **Dalane W. Kitzman**, **Che Ping Cheng**



**Dr. Che Ping Cheng** was the first author on the following presentations:

- *Cardiac  $\beta_3$ -Adrenergic Receptor Deficiency Mice Protected from Cardiac Aging: Insights into the Cellular and Molecular Mechanism of Myocardial Aging.* *Circulation.* 2022;146:A9703.

**Che Ping Cheng**, Zhe Chen, Peng Zhou, Yixi Liu, **David M. Herrington**, **David X.M. Zhao**, **Dalane W. Kitzman**, **Heng-Jie Cheng.**

• *Cariporide, a Selective  $Na^+-H^+$  Exchange Inhibitor, Enhances Cardiac Positive Inotropic and Lusitropic Responses to Dobutamine in Heart Failure: Assessment by Pressure-Volume Analysis.* *Circulation.* 2022;146:A9515. **Che-Ping Cheng**, Tiankai Li, Xiaowei Zhang, Zhi Zhang, **David X.M. Zhao**, **David M. Herrington**, **Dalane W, Kitzman**, **Heng-Jie Cheng.**



**Dr. Liliya Yamaleyeva** was invited to give a talk at the Molecular Medicine Seminar Series at Tufts University School of Medicine in Boston, MA on October 18, 2022. Her presentation was titled "Apelin/APJ Axis in Preeclampsia – A Novel Therapeutic Approach".

Anna Soloshenko, a WFU undergraduate student mentored by **Dr. Liliya Yamaleyeva**, presented a poster at the AHA Hypertension Sessions Conference on September 6-10, 2022 in San Diego, CA. The title of her presentation was "Apelin and Elabela Attenuate the Pro-Inflammatory Response in Hypoxic HTR-8/SVneo Trophoblastic Cells".

Jonathan Ray, MD, MS, a research fellow mentored by **Dr. Liliya Yamaleyeva**, presented his studies at the WFUSOM 30th Annual Surgical Sciences Research Day on November 15, 2022. His presentation was titled "Sex Differences in Middle cerebral artery hemodynamics but not systemic arterial stiffness in normotensive adult rats".



**Dr. Oguz Akbilgic** was invited to present "Introduction to Machine Learning " during The Foundation for Sickle Cell Research, Research Symposium, September 22, 2022.

Muscadine Grape Extract Inhibits Trastuzumab-Sensitive and -Resistant HER2 Positive Breast Cancer and Prevents Trastuzumab-Induced Cardiotoxicity by Drs. Jessica D. Mackert, **E. Ann Tallant** and **Patricia E. Gallagher** was presented at the 8th International Conference on Tumor Microenvironment and Cellular Stress: Signaling, Metabolism, Imaging and Therapeutic Targets, Rhodes, Greece, September 26-October 1, 2022



**Dr. Mark Chappell** presented "The Renin-Angiotensin System in Fetal Programming of Hypertension" at Tulane University Hypertension & Renal Center of Excellence on December 8, 2022.

## INVITED PRESENTATIONS *continued*



**Dr. Michael Shapiro** gave the following invited presentations:

ACC Latin America September 2022 in Mexico City, Mexico

- Target PCSK9: New Strategies, New Questions
- Evolving therapies: Going Beyond Diabetes

AHA Scientific Sessions November 2022 in Chicago, IL

- Lipoprotein(a) 101: The Fundamentals

Chilean Congress of Cardiology in Santiago, Chile (Plenary Session and 3 additional talks)

- Management of Dyslipidemia: The Most Important CV Risk Factor in Atherosclerosis
- Lipoprotein(a): The Silent Enemy
- Role of CAC in Prevention of ASCVD
- Changing Paradigms in LDL-C Reduction

Cardiology Grand Rounds at Montefiore Medical Center, NY

- Pushing the Envelope with PCSK9 – Twenty Years of Progress

**Dr. Shapiro et al had the following abstracts at the 2022 AHA Scientific Sessions in Chicago, IL:**

Quispe R, Mszar R, Lahan S, Elizondo JV, Budoff MJ, Cury RC, Feldman T, Arias L, Blaha MJ, **Shapiro MD**, Blankstein R, Sharma G, Cainzos-Achirica M, Nasir K, Fiaklow J.

Association Between Remnant Cholesterol And Coronary Plaque Features: The Miami Heart Study At Baptist Health South Florida. *Circulation* 2022;146:A11601.

Mszar R, Cainzos-Achirica M, Elizondo JV, Quispe R, Ali SS, Saxena A, Cury RC, Budoff MJ, Feldman T, Lahan S, Blaha M, **Shapiro MD**, Sharma G, Santos R, Fiaklow J, Nasir K. Lipoprotein(a), Coronary Atherosclerotic Plaque, And High-risk Plaque In Asymptomatic Individuals: The Miami Heart Study At Baptist Health South Florida. *Circulation* 2022;146:A12006.

Rikhi R, Bhatia H, **Schaich CL**, Ashburn N, **Herrington DM**, Tsai MY, Michos ED, Chevli PA, Tsimikas S, **Shapiro MD**. Association Of Lipoprotein(a) And Hypertension In Primary Prevention Of Cardiovascular Disease: The Multi-Ethnic Study Of Atherosclerosis (MESA). *Circulation* 2022;146:A10239.

Chevli PA, Selvaraj S, Hammoud A, Connelly MA, Defilippi C, Lima JAA, Khan SS, **Herrington DM**, **Shapiro MD**, Vaduganathan M. Integrating Ketone Bodies in Multi-marker Risk Prediction Of Incident Heart Failure In The Multi-ethnic Study Of Atherosclerosis (MESA). *Circulation* 2022; 146:A12121.

Bhatia HS, Rikhi R, Allen TS, Yeang C, Guan W, Garg PK, Tsai MY, Criqui MH, **Shapiro MD**, Tsimikas S. Lipoprotein(a) and the Pooled Cohort Equations for Risk Prediction: The Multi-Ethnic Study of Atherosclerosis. *Circulation* 2022;146:A11309.

Lahan S, Cainzos-Achirica M, Elizondo JA, Ali SS, Arias L, Saxena A, Feldman T, Blaha MJ, **Shapiro MD**, Blankstein R, Sharma G, Cury RC, Budoff M, Fiaklow J, Nasir K. Systemic Inflammation and Coronary Plaque Among Asymptomatic US Adults - Insights From the Miami Heart Study at Baptist Health South Florida. *Circulation* 2022;146:A11584.

Hagan K, Cainzos-Achirica M, Mszar R, Ali SS, Arias L, Saxena A, Cury RC, Budoff M, Feldman T, Lahan S, Blaha MJ, **Shapiro MD**, Sharma G, Santos RD, Fiaklow J, Nasir K. LDL-Cholesterol, Coronary Plaque, and Resilience to Coronary Atherosclerosis in a Middle-Aged Asymptomatic US Population: The Miami Heart Study at Baptist Health South Florida. *Circulation* 2022;146:A13515.

Patel J, Al Rifai M, Cainzos-Achirica M, Feldman T, Blaha MJ, **Shapiro MD**, Blankstein R, Sharma G, Ali SS, Arias L, Saxena A, Feldman D, Cury RC, Budoff M, Fiaklow J, Nasir K. Family History of Atherosclerotic Cardiovascular Disease and Subclinical Coronary Atherosclerosis Among Asymptomatic Individuals: The Miami Heart Study at Baptist Health South Florida. *Circulation* 2022;146:A11698.

# AWARDS AND ACCOMPLISHMENTS



**Dr. Andrew South** accepted the position of Chair of the Communications Committee of the American Heart Association's Council on the Kidney in Cardiovascular Disease.



**Dr. Matthew Goldman** received The Dr. Paul Jansen Award for Biomedical Research to study disparate care in vascular disease.



**Dr. Dhanendra Tomar** co-chaired the Session "Mitochondria in Health and Disease" at Cell Bio 2022, the joint annual meeting of the American Society for Cell Biology (ASCB) and European Molecular Biology Organization (EMBO) in Washington, DC, December 3-7, 2022.



Led by **Dr. Gabriela Velazquez-Ramirez** Vascular and Endovascular Surgery received an approval of 0/5 integrated residency program in Vascular Surgery.

**Dr. Dhanendra Tomar** was selected to serve as an Associate Member of the American Society for Cell Biology's International Affairs Committee (IAC).



**Dr. Maureen Sheehan** was named co-chair of the Society for Vascular Surgery committee on self-assessment Graduate Medical Education.



**Dr. Oguz Akbilgic** joined the Editorial Board of European Heart Journal Digital Health.

**Dr. Oguz Akbilgic** became the Associate Editor for Frontiers in Cardiovascular Epidemiology and Prevention.



**Dr. Elijah Beaty** was recognized as an outstanding reviewer for Circulation in 2022! This recognition is based on objective criteria of the quality of reviews provided, total number of papers reviewed, proportion of invitations accepted, and timeliness of review submissions.

**Drs. Jim Jordan, Ellie Rabar, Lucas Neff and Tim Williams** received a New Team Science Award for "Advanced Computational Cardiovascular Lab for Trauma, Hemorrhagic Shock & Critical Care". The award was given on Nov. 18, 2022, with each team member receiving a plaque. The New Team Science Award is given to recently formed teams of researchers collaborating on a new project. The goal is to reward early-stage, multidisciplinary teams that address innovative research questions.

**Dr. Michael Elliot** et al provided the Society for Cardiovascular Magnetic Resonance guidelines for training and competency of CMR technologists published in the Journal of Cardiovascular Magnetic Resonance:

Darty S, Jenista E, Kim RJ, Dyke C, Simonetti OP, Radike M, Bryant J, Lawton CB, Freitag N, Shah DJ, Bucciarelli-Ducci C, Raman S, Plein S, Elliott MD. Society for cardiovascular magnetic resonance recommendations for training and competency of CMR technologists. J Cardiovasc Magn Reson. 2022 Dec 5;24(1):68. doi: 10.1186/s12968-022-00900-1. PMID: 36464719; PMCID: PMC9721081.

# ANNOUNCEMENTS



The documentary "Healthy Hope" was awarded the Best Documentary by the GO Independent International Film Festivals after screening at the Atlanta Cinefest, Chapel Hill Film Festival, Cleveland Cinefest, Dallas Cinema Awards, Milwaukee Movie Fest and Fame Factor. "Healthy Hope" promotes the health benefits of muscadine grape extracts through interviews with six clinicians and scientists currently conducting clinical and basic research on muscadine grape extracts, including Dr. Patricia E. Gallagher from Hypertension & Vascular Research at Atrium Health Wake Forest Baptist. "Healthy Hope" premiered on February 26, 2022, at the 15th Annual Amelia Island Film Festival and was chosen as the commencement film for the documentary segment of the festival. The documentary was also selected for screening at the RiverRun International Film Festival in Winston-Salem and the Northern Virginia International Film & Music Festival in Fairfax, Virginia. "Healthy Hope" is now available for screening on Vimeo at <https://healthyhope-themuscadinedocumentary.vhx.tv/>

The **Wake Mitochondrial Research Symposium**, designed to foster collaborative opportunities for research investigators from the Wake Forest University School of Medicine and Atrium Health Wake Forest Baptist in the field of mitochondrial biology, will be held Thursday, April 6, 2023. The keynote speaker will be Darrell Neuffer, PhD, Director, East Carolina Diabetes and Obesity Institute, Professor of Medicine and Professor in Physiology and Kinesiology East Carolina University. The program includes trainee's poster and platform presentations. Registration and Abstract Submission Form: <https://forms.office.com/r/BfU2Y9WFEJ>



For more information please contact: [dtomar@wakehealth.edu](mailto:dtomar@wakehealth.edu)

**The Cardiovascular Sciences Center (CVSC) is seeking proposals** for the 2023 Pilot Award Program. The projects should be those in need of support to promote new areas or technologies for cardiovascular research (basic, clinical, population), as well as to foster new collaborations, particularly across the Atrium Health System. The goal of the CVSC Pilot Program is to allow investigators (particularly early career researchers) to pursue novel and innovative ideas that will improve the likelihood of obtaining extramural funding for their research. We encourage research that uses Institutional Cores and other shared resource. The funding is also meant to allow investigators to perform critical experiments, access core facilities or improve analyses to address specific critiques raised by reviewers for already submitted and reviewed applications. **Completed applications are due Friday, 03/17/2023.** Please contact Dr. Liliya Yamaleyeva ([lyamaley@wakehealth.edu](mailto:lyamaley@wakehealth.edu)) if you need further guidance.

## Here is how you can get started!

Go to this link to access the application form and RFA instructions. <https://redcap.wakehealth.edu/redcap/surveys/?s=8T7NR7N3PHEEK8RM>

A screenshot of a web-based application form titled "2022/2023 Cardiovascular Sciences Center (CVSC) Request for Pilot Applications". The form includes sections for "RFA", "Applicant Information", and "Abstract and Research Plan". Fields include "Project Title", "Principal Investigator Name", "Principal Investigator Department", "Principal Investigator Rank", "Principal Investigator Email", and "Number of Project Key Personnel". There is also a field for "Abstract (200 words max)".

# PUBLICATIONS

Between the months of September-December, Cardiovascular Sciences Center members published **105** manuscripts. Of these, **9** were CVSC first author publications. Below we highlight several of those.

Beaty EH, Fernando RJ, Jacobs ML, Winter GG, Bulla C, Singleton MJ, Patel NJ, Bradford NS, **Bhave PD**, Royster RL. Comparison of Bolus Dosing of Methohexital and Propofol in Elective Direct Current Cardioversion. *J Am Heart Assoc.* 2022 Oct 4;11(19):e026198. doi: 10.1161/JAHA.122.026198. Epub 2022 Sep 21. PMID: 36129031; PMCID: PMC9673741.

**Hughes TM, Lockhart SN**, Suerken CK, Jung Y, Whitlow CT, Bateman JR, Williams BJ, **Espelund MA**, Sachs BC, Williamson J, Cleveland M, Yang M, Rogers S, Hayden KM, **Baker LD, Craft S**. Hypertensive Aspects of Cardiometabolic Disorders Are Associated with Lower Brain Microstructure, Perfusion, and Cognition. *J Alzheimers Dis.* 2022;90(4):1589-1599. doi: 10.3233/JAD-220646. PMID: 36314205.

Li T, Wang Q and **Cheng C**. Effect of aging on cardiovascular responses to cold stress in humans. *Frigid Zone Medicine*, vol.2, no.3, 2022, pp.149-157. <https://doi.org/10.2478/fzm-2022-0022>

\*Patil PD, Melo AC, Westwood BM, **Tallant EA, Gallagher PE**. A Polyphenol-Rich Extract from Muscadine Grapes Prevents Hypertension-Induced Diastolic Dysfunction and Oxidative Stress. *Antioxidants (Basel)*. 2022 Oct 14;11(10):2026. doi: 10.3390/antiox11102026. PMID: 36290749; PMCID: PMC9598776.

Xu P, Wang M, Sharma NK, Comeau ME, Wabitsch M, Langefeld CD, Civelek M, Zhang B, **Das SK**. Multi-omic integration reveals cell-type-specific regulatory networks of insulin resistance in distinct ancestry populations. *Cell Systems*. [https://www.cell.com/cell-systems/fulltext/S2405-4712\(22\)00493-8](https://www.cell.com/cell-systems/fulltext/S2405-4712(22)00493-8) DOI: <https://doi.org/10.1016/j.cels.2022.12.005>

Rikhi R, Bhatia HS, **Schaich CL**, Ashburn N, Tsai MY, Michos ED, Chevli PA, **Herrington DM**, Tsimikas S, **Shapiro MD**. Association of Lp(a) (Lipoprotein[a]) and Hypertension in Primary Prevention of Cardiovascular Disease: The MESA. *Hypertension*. 2022 Dec 13. doi: 10.1161/HYPERTENSIONAHA.122.20189. Epub ahead of print. PMID: 36511156.

*\*Invited Article as part of the Special Issue "Antioxidants in Fruits and Vegetables"*



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