

Department of
Internal Medicine

**Top Papers
Published in 2024**



Atrium Health

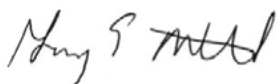


Wake Forest University
School of Medicine

We are delighted to announce the Department of Internal Medicine's awards for the Top Research Papers published in 2024.

The 10 papers receiving recognition this year reflect the collective work of Internal Medicine trainees and faculty in Winston-Salem and Charlotte. The papers were selected on the basis of their originality and their scientific and clinical impact. The papers span the spectrum of basic, clinical, and healthcare delivery science and represent the creativity, passion, and dedication of our faculty and trainees. The papers further demonstrate the Department's commitment to improve the health of the patients we serve by advancing understanding of the mechanisms of disease, by testing novel therapies, and by building and implementing the evidence base for clinical practice. Lastly, the papers represent the Department's long-term goal of advancing a preeminent Academic Learning Health System.

Please join us in congratulating this year's awardees. But recognize that the 10 papers receiving awards this year represent just the tip of the iceberg of the wonderful research being done by so many faculty and trainees in the Department.



**Gary E. Rosenthal,
MD, FACP**

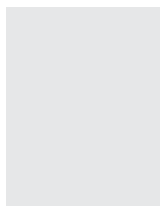


**David M. Herrington,
MD, MHS**



**Scott L. Furney,
MD, MBA**

This year's awardee recipients were chosen by the 2024 selection committee:



**Thomas K. Houston II,
MD, MPH**

**Marc Kowalkowski,
PhD**

**Stephen Kritchevsky,
PhD**

**Greg Shelness,
PhD**

Noninvasive Ventilation for Preoxygenation during Emergency Intubation

Citation: *New England Journal of Medicine*. 2024 Jun 20;390(23):2165-2177. Epub 2024 Jun 13.

Kevin W. Gibbs, MD

Authors: Gibbs KW, Semler MW, Driver BE, Seitz KP, Stempel SB, Taylor C, Resnick-Ault D, White HD, Gandotra S, Doerschug KC, Mohamed A, Prekker ME, Khan A, Gaillard JP, Andrea L, Aggarwal NR, Brainard JC, Barnett LH, Halliday SJ, Blinder V, Dagan A, Whitson MR, Schauer SG, Walker JE Jr, Barker AB, Palakshappa JA, Muhs A, Wozniak JM, Kramer PJ, Withers C, Ghamande SA, Russell DW, Schwartz A, Moskowitz A, Hansen SJ, Allada G, Goranson JK, Fein DG, Sottile PD, Kelly N, Alwood SM, Long MT, Malhotra R, Shapiro NI, Page DB, Long BJ, Thomas CB, Trent SA, Janz DR, Rice TW, Self WH, Bebartha VS, Lloyd BD, Rhoads J, Womack K, Imhoff B, Ginde AA, Casey JD; PREOXI Investigators and the Pragmatic Critical Care Research Group

Summary: The PREOXI trial compared preoxygenation with noninvasive ventilation to preoxygenation with an oxygen mask in patients undergoing tracheal intubation in the ED or ICU with regards to the outcome of hypoxemia. We found that preoxygenation with noninvasive ventilation reduced hypoxemia during intubation and was associated with fewer cardiac arrests.

Phase III Randomized, Placebo-Controlled Clinical Trial of Donepezil for Treatment of Cognitive Impairment in Breast Cancer Survivors After Adjuvant Chemotherapy (WF-97116)

Citation: *Journal of Clinical Oncology*. 2024 Jul 20;42(21):2546-2557. Epub 2024 May 6.

Glenn J. Lesser, MD

Authors: Rapp SR, Dressler EV, Brown WM, Wade JL 3rd, Le-Lindqwister N, King D, Rowland KM, Weaver KE, Klepin HD, Shaw EG, Lesser GJ

Summary: The Wake Forest NCORP Research Base-sponsored REMEMBER trial was a prospective, placebo-controlled, randomized, double-blind phase III study to assess the effects of 24 weeks of donepezil on cognitive function in breast cancer survivors with chemotherapy-related cognitive impairment. Two hundred and seventy-six breast cancer survivors were randomized to receive 24 weeks of donepezil or placebo and underwent serial

standardized neurocognitive testing and patient-reported assessment of cognitive function. No differences were measured in cognitive function between the two arms during 24 weeks of follow-up. Thus, donepezil did not improve cognitive function in breast cancer survivors 1-5 years following completion of chemotherapy.

Expanded Child Tax Credit and Food Insecurity

Citation: *JAMA Internal Medicine.* 2024 Oct 1;184(10):1260-1262.

Authors: Berkowitz SA, Palakshappa D

Deepak Palakshappa,
MD, MSHP

Summary: The Expanded Child Tax Credit was enacted in 2021 to more effectively support households with children in assisting with needs, such as food insecurity, by providing benefit prepayments and removing earning requirements, but the policy expired in 2022. We conducted a longitudinal cohort study using nationally representative data and found that enactment of the Expanded Child Tax Credit was associated with substantially lower number of households reporting food insecurity in the subsequent year, and expiration of the policy was associated with substantially greater food insecurity.

Impact of Neighborhood Disadvantage on Cardiometabolic Health and Cognition in a Community-Dwelling Cohort

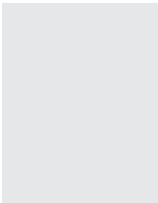
Citation: *Alzheimer's & Dementia (Amst).* 2024 Dec 6;16(4):e70021.

Sudarshan
Krishnamurthy, MD/
PhD student

Authors: Krishnamurthy S, Lu L, Johnson CJ, Baker LD, Leng X, Gaussoin SA, Hughes TM, Ma D, Caban-Holt A, Byrd GS, Craft S, Lockhart SN, Bateman JR

Summary: This study highlights that neighborhood-level socioeconomic disadvantage is associated with moderately worse cardiometabolic health and significantly worse cognitive function as it relates to Alzheimer's disease and related dementias (ADRD). Further study of place-based social determinants of health and structural racism may help to better understand how where one lives may impact ADRD risk and outcomes.

James R. Bateman,
MD, MPH



Savannah Longo,
student intern

Osvaldo Delbono, MD,
PhD

Nilanjan Ghosh, MD,
PhD

Accelerated Sarcopenia Precedes Learning and Memory Impairments in the P301S Mouse Model of Tauopathies and Alzheimer’s Disease

Citation: *Journal of Cachexia, Sarcopenia and Muscle.* 2024 Aug;15(4):1358-1375. Epub 2024 Apr 22.

Authors: Longo S, Messi ML, Wang ZM, Meeker W, Delbono O

Summary: In the PS19 mouse model of tauopathy and Alzheimer’s disease, we observed significant skeletal muscle atrophy and neuromuscular junction degeneration, with muscle weight differences and reduced myofiber innervation occurring months before cognitive decline becomes apparent. These findings suggest that accelerated neurogenic sarcopenia may precede and potentially predict cognitive deficits associated with Alzheimer’s disease.

Treatment Effectiveness of Venetoclax-Based Therapy After Bruton Tyrosine Kinase Inhibitors in Chronic Lymphocytic Leukemia: An International Real-World Study

Citation: *American Journal of Hematology.* 2025 Mar;100(3):511-515. Epub 2024 Dec 19.

Authors: Ghosh N, Eyre TA, Brown JR, Lamanna N, Manzoor BS, Coombs CC, Tuncer HH, Ujjani C, Leslie LA, Roeker LE, Davids MS, Rhodes JM, Skarbnik AP, Sinai W, Fleury I, Hill BT, Martinez-Calle N, Barr PM, Jawaidd D, Emechebe N, Pearson L, Lansigan F, Choi Y, Jensen CE, Fakhri B, Stephens DM, Marx SE, Schuster SJ, Coyle M, Pivneva I, Watson T, Guerin A, Shadman M

Summary: The international CORE study demonstrates that patients with CLL who initiated venetoclax based therapy following BTK inhibitors achieved a high overall response rate of 80%. Moreover, patients who use venetoclax after previous BTK inhibitors remain progression free for prolonged time, about 44 months.

Integrated Multi-Omic Analyses Uncover the Effects of Aging on Cell-Type Regulation in Glucose-Responsive Tissues

Citation: *Aging Cell.* 2024 Aug;23(8):e14199. Epub 2024 Jun 26.

Authors: Xu P, Kong Y, Palmer ND, Ng MCY, Zhang B, **Das SK**

Summary: This study conducted a comprehensive gene regulatory network analysis to evaluate the impacts of aging on glucose-responsive tissues by integrating multi-omic data sets from the African and European ancestry cohorts and identified aging-associated regulations of gene expression networks, changes in metabolite levels, and cell-type-specific responses in adipose and muscle tissues. The analyses provide a comprehensive understanding of the impacts of aging on glucose-responsive tissues and identify potential plasma metabolite biomarkers for these effects.

**Swapam K. Das, PhD,
MSc**

Unacylated Ghrelin Protects Against Age-Related Loss of Muscle Mass and Contractile Dysfunction in Skeletal Muscle

Citation: *Aging Cell.* 2024 Dec;23(12):e14323. Epub 2024 Sep 2.

Authors: **Kim H**, Ranjit R, Claflin DR, Georgescu C, Wren JD, Brooks SV, Miller BF, **Ahn B**

Summary: Unacylated ghrelin protects against sarcopenia in old animals by preserving neuromuscular junction integrity, mitochondrial bioenergetics, and proteostasis.

**Hyunyoung Kim,
research lab tech**

Bumssoo Ahn, PhD

Identifying Key Genes Involved in Axillary Lymph Node Metastasis in Breast Cancer Using Advanced RNA-Seq Analysis: A Methodological Approach with GLMQL and MAS

Citation: *International Journal of Molecular Sciences*. 2024 Jul 3;25(13):7306.

Metin N. Gurcan, PhD

Authors: Rezapour M, Wesolowski R, **Gurcan MN**

Summary: This study applied advanced RNA-Seq analysis techniques, including Generalized Linear Models with Quasi-Likelihood (GLMQL) and Magnitude Altitude Scoring (MAS), to identify key genes associated with axillary lymph node metastasis in breast cancer. This approach provided novel insights into molecular mechanisms driving metastasis, with implications for early detection and targeted therapeutic strategies.

Protein-Coding Mutation in Adcy3 Increases Adiposity and Alters Emotional Behaviors Sex-Dependently in Rats

Citation: *Obesity (Silver Spring)*. 2025 Jan;33(1):91-103. Epub 2024 Dec 4.

Mackenzie Fitzpatrick,
PhD student

Authors: Fitzpatrick MK, Szalanczy A, Beeson A, Vora A, Scott C, Grzybowski M, Klotz J, Der N, Chen R, Geurts AM, **Solberg Woods LC**

Summary: Our work shows that a mutation in the transmembrane domain of the gene *Adcy3* leads to increased fat mass and emotional behaviors in a rat model with key sex differences: fat mass was caused by increased food intake in males but decreased energy expenditure in females. This work identifies a likely genetic and biological link between obesity and mental health disease in humans, emphasizes the importance of studying both sexes and paves the way for future precision medicine approaches to treat these diseases.

Leah C. Solberg
Woods, PhD

