2024

ORI 9TH ANNUAL MEETING

ONE HEALTH: METABOLIC HEALTH

MAY 1ST 10 A.M.-5 P.M.
ACADEMIC EVENT CENTER, (AEC) TTUHSC, LUBBOCK

TEXAS TECH UNIVERSITY
Office *of* Research & Innovation™

Obesity Research Institute

ONEHEALTH
CREATING IMPACT TOGETHER

AGENDA

9th Annual Meeting | One Health: Metabolic Health | May 1st, 2024, 10 a.m.-5 p.m.

10-10:20 a.m.	**ORI Welcome Remarks – Academic Event Center, TTUHSC, Lubbock** **Naïma Moustaïd-Moussa, Ph.D., FTOS, FAHA,** Director of ORI, TTU **Jannette M. Dufour, Ph.D., Associate** Director of ORI, TTUHSC **Chancellor Tedd L. Mitchell, M.D.,** TTUS **Joseph A. Heppert, Ph.D.,** Vice President for Research & Innovation, TTU **Lance McMahon, Ph.D.,** Senior Vice President for Research & Innovation, TTUHSC **Deborah J. Clegg, Ph.D.,** Vice President for Research, TTUHSC El Paso
10:20-10:25 a.m.	**Updates on the Institute for One Health Innovation** **Lance McMahon, Ph.D.,** Senior Vice President for Research & Innovation, TTUHSC
10:25-10:30 a.m.	**Updates on TUF Funding** **Joseph A. Heppert, Ph.D.,** Vice President for Research & Innovation, TTU
10:30-11:10 a.m.	**Keynote Speakers** **Introduction: Bibha Gautam, Ph.D., R.N., CNE,** Associate Professor, School of Nursing, TTUHSC **Holly Wei, Ph.D., RN, CPN, NEA-BC, FAAN,** Dean and Professor, School of Nursing, TTUHSC **"Using One Health Approach to Address Rural Health Challenges in West Texas"** **Introduction: Conrad Lyford, Ph.D.,** Professor, Agricultural and Applied Economics, TTU **Adrian Billings, M.D., Ph.D., FAAFP,** Associate Academic Dean, Rural and Community Engagement Division, Family Medicine, TTUHSC Permian Basin **"Rural Health Care and Education: Investment Needed"**
11:10-11:25 a.m.	**Q&A**
11:25 a.m.-12:20 p.m.	**Student/Postdoc Poster Competition**
12:20 - 1 p.m.	**Lunch and Networking**

1 - 1:35 p.m. **Databases/Big Data**
Moderator: Alexis R. Rodriguez, M.S., Ph.D. Student, TTUHSC, Cell Biology and Biochemistry

Chip Shaw, Ed.D., MPH, TTUHSC, Executive Director, Clinical Research Data Warehouse
"Introduction to the NIH All of Us Research Data"

Dawei Li, Ph.D., TTUHSC, Associate Professor, Immunology & Molecular Microbiology
"Viral Sequence Detection in Genomic Sequencing Data"

Julie St. John, DrPH, MPH, MA, CHWI, TTUHSC Abilene, Associate Professor, Julia Jones Matthews School of Population and Public Health
"Engaging Community in Research"

Mandana Pahlavani, Ph.D., Texas Woman's University & UT Southwestern Medical Center, Assistant Professor, Nutrition and Food Sciences & Adjunct Assistant Professor, Internal Medicine
"Extreme High Cholesterol Efflux is Linked to Anti-Inflammatory and Anti-Oxidative Functions of HDL than Extreme Low Cholesterol Efflux"

Caleb Phillips, Ph.D., TTU, Curator of Genetic Resources, Natural Science Research Laboratory, Museum of TTU and Associate Professor, Biological Sciences
"The Integration of Microbiomes and Host Genomics in Infectious Disease"

1:35-1:45 p.m. **Q&A**

1:45-2:20 p.m. **Faculty Short Talks**
Moderator: Elyvine Ingabire-Gasana, Ph.D. Candidate, TTU, Nutritional Sciences

T. Annelise Nguyen, MBA, Ph.D., TTU School of Veterinary Medicine, Diplomate of the American Board of Toxicology, Fellow of the Academy of Toxicological Sciences, Associate Dean for Research
"Overview of One Health Sciences Ph.D. Program"

Heidi Villalba, Ph.D., TTU School of Veterinary Medicine, Assistant Professor, Neurophysiology and Pharmaceutical Science
"Sex Differences in Preclinical Models of Ischemic Stroke and Repurposing Drugs"

Carolyn E. Arnold, DVM, Ph.D., DACVS, TTU School of Veterinary Medicine, Professor, Large Animal Surgery
"The Effect of Antibiotics on the Equine Hindgut Microbiome"

Kalavathy Rajan, Ph.D., TTU, Assistant Professor, Fiber and Biopolymer Research Institute
"Establishing an Agro-based Bioeconomy in the South High Plains"

Lindsey C. Slaughter, Ph.D., TTU, Associate Professor, Soil Microbial Ecology/Biochemistry
"Enhancing Soil Ecology and Plant-microbe-soil Interactions for Healthy Soils, Plants, and People in Semi-arid Ecosystems"

Zemfira Karamysheva, Ph.D., TTUHSC, Associate Professor, Cell Biology and Biochemistry
"mRNA Translation Regulation in Health and Disease"

2:20-2:30 p.m. **Q&A Session & Coffee Break**

2:30-3:55 p.m. **Funding and Research Initiative Highlights**
Moderator: Kay J. Tindle, Ph.D., TTU, Associate Vice President, Office of Research & Innovation

2:30-2:50 p.m. **ARPA-H**
Carleigh Smith, TTUHSC, Senior Director, Division of Research Innovation, Col-laboration, and Entrepreneurship

2:50-2:55 p.m. **TTU Strategic Research on Microbiome**
Naïma Moustaïd-Moussa, Ph.D., FTOS, FAHA, TTU, Director of ORI

2:55-3:05 p.m. **Food is Medicine**
Christine D. Garner, Ph.D., RD, CLC, TTUHSC, Assistant Vice President for Re-search, Assistant Professor, Principal Investigator for VIBRANT MOMS, Obstetrics and Gynecology, InfantRisk Center

Rama Chemitiganti, M.D., TTUHSC Permian Basin, Director, Center of Excellence for Diabetes and Endocrinology, ECHD Endowed Chair, Internal Medicine

3:05-3:20 p.m. **Sorghum: One Health Food System**
Yinping Jiao, Ph.D., TTU, Assistant Professor, Institute of Genomics for Crop Abiotic Stress Tolerance, Plant and Soil Science

Jannette M. Dufour, Ph.D., TTUHSC, Associate Director of ORI

Oak Hee Park, Ph.D., TTU, Research Assistant Professor, College of Human Sci-ences & Adjunct Assistant Professor, Graduate Faculty, Nutritional Sciences

3:20-3:30 p.m. **All of Us Research**
Anna M. Eiring, Ph.D., TTUHSC El Paso, Assistant Professor, Center of Emphasis in Cancer, Molecular and Translational Medicine, Paul L. Foster School of Medicine

3:30-3:55 p.m. **Open Discussion**

3:55-4 p.m.	**Awards Announcements**
4-5 p.m.	**Student/Postdoc Professional Development Session: Academic/Government Opportunities** Sponsored by the Graduate Nutrition Organization (GNO), TTU Graduate School & TTUHSC Graduate School of Biomedical Sciences (GSBS) **Paule Valery Joseph, CRNP, Ph.D.,** Chief, Tenure-Track Investigator, Section of Sensory Science and Metabolism (SenSMet), Division of Intramural Clinical and Biological Research (DICBR), National Institute of Alcohol Abuse & Alcoholism **Kate J. Larson, Ph.D.,** USDA ARS Research Leader, Retired, Affiliate Graduate Faculty, Human Nutrition, Food and Animal Sciences, College of Tropical Agricul-ture and Human Resources, University of Hawaii at Manoa **Brandt L. Schneider, Ph.D.,** TTUHSC, Dean for Graduate School of Biomedical Sciences & Professor, Medical Education and Cell Biology and Biochemistry
5 p.m.	**Adjourn**

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Obesity Research Institute

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FULL PROGRAM HERE

KEYNOTE SPEAKERS

Holly Wei, Ph.D., RN, CPN, NEA-BC, FAAN

Dean and Professor, School of Nursing, UMC Health System Endowed Chair for Excellence in Nursing, Texas Tech University Health Sciences Center, Lubbock, TX

Dr. Holly Wei received her Ph.D. from the University of North Carolina at Chapel Hill. She is a Fellow of the American Academy of Nursing and actively shapes healthcare policy and promotes excellence in nursing. Her research program focuses on healthcare organizational culture, leadership development, clinician well-being, interprofessional collaboration, and health promotion across the lifespan. Dr. Wei has authored over 80 publications and delivered numerous keynote presentations. Her innovative nursing practice models and Convergent Care Theory have been adopted by healthcare systems, leading to significant enhancements in practice and patient care standards. As a distinguished scholar, Dr. Wei contributes extensively to professional journals as an editor and serves on advisory boards. She has held positions on the Board of Directors and various committees within national and international nursing organizations. Dr. Wei has served in multiple leadership roles in nursing before joining TTUHSC. Her visionary leadership and compassionate approach to nursing have garnered her numerous accolades, including the esteemed International Leininger Caring-Culture Award. Dr. Wei's leadership textbook, Visionary Leadership in Healthcare, was awarded the 2022 American Journal of Nursing (AJN) Book of the Year Award.

Adrian Billings, M.D., Ph.D., FAAFP

Associate Academic Dean, Rural and Community Engagement, Senior Fellow of the F. Marie Hall Institute for Rural and Community Health, Texas Tech University Health Sciences Center Permian Basin

Dr. Adrian Billings, of Alpine, is the Chief Medical Officer of Preventative Care Health Services, a federally qualified health center, in the Big Bend, the Associate Academic Dean of Rural and Community Engagement and Senior Fellow of the F. Marie Hall Institute for Rural and Community Health at Texas Tech University Health Sciences Center. Dr. Billings has been a career long rural community physician along the rural Texas-Mexico border of west Texas. He is a National Health Service Corps Scholar alumnus and has remained in his NHSC site for his entire professional career of 17 years. Dr. Billings has served as a HRSA Special Government Employee on the National Advisory Council to the National Health Service Corps. Dr. Billings serves a Principal Investigator on a HRSA Behavioral Health Workforce Education Training Grant and co-PI on a HRSA Bureau of Health Workforce Hispanic Center of Excellence grant. Dr. Billings accolades include Texas Academy of Family Physician of the Year and the Association of Clinicians for the Underserved Clinician of the Year. Dr. Billings is also an elected school board trustee for rural Alpine Independent School District. Dr. Billings is passionate about enabling rural borne and educated students opportunities to enroll in health care training programs.

NOTES

ACKNOWLEGEMENTS

ORI Annual Meeting Sponsors and Partners

Texas Tech University Office of Research & Innovation
Texas Tech University Office of Research Development & Communication
Texas Tech University College of Human Sciences
Texas Tech University Graduate School
Texas Tech University Health Sciences Center Cell Biology & Biochemistry
Texas Tech University Health Sciences Center Graduate School of Biomedical Sciences
Graduate Nutrition Organization
Texas Tech University
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Glenn Cummins (TTU)
Sara Dodd (TTU)
Jannette Dufour (TTUHSC)
Christine Garner (TTUHSC)
Bibha Gautam (TTUHSC)
Elyvine Ingabire Gasana (TTU student)
Lauren Gollahon (TTU) Chanaka
Kahathuduwa (TTUHSC) Wei Li (TTU)
Conrad Lyford (TTU)
Naïma Moustaïd Moussa (TTU)
Annelise Nguyen (SVM Amarillo) Wilna
Oldewage-Theron (TTU)
Oak-Hee Park (TTU)
Alexis Rodriguez (TTUHSC student)
Alex H. Scoggin (TTU)
Clarissa Strieder Barboza (TTU) Leslie
Thompson (TTU)
Kay J. Tindle (TTU)
Jason Van Allen (TTU)

ORI Poster Session Judges

Jeremy D. Bailoo (TTUHSC)
Anand Chakroborty (TTUHSC)
Rama Chemitiganti (TTUHSC)
O. Emmanuel Chike (TTU)
Quynh-Hoa Do (TTUHSC)
Sayanika Dutta (TTUHSC)
Lekha George (TTUHSC)
Lauren Gollahon (TTU)
Birgit Green (TTU)
Hamed Khedmatgozar (TTUHSC)
Danielle Levitt (TTU)
Hanna Moussa (TTU)
Annelise Nguyen (SVM Amarillo)
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Mandana Pahlavani (TWU)
Caleb Phillips (TTU)
Kalavathy Rajan (TTU)
Lindsey Slaughter (TTU)
Travis Thompson (TTU)
Grant Tinsley (TTU)
J.P. Torres Guimaraes (TTUHSC)
Heather L Vellers (TTU)
Heidi Villalba (TTU)
Yujiao Zu (TTU)

ORI Annual Meeting Planning Team

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Jannette Dufour (TTUHSC)
Kaitlyn Hale (TTU)
Elyvine Ingabire Gasana (TTU)
Conrad Lyford (TTU)
Annelise Nguyen (SVM Amarillo)
Deborah Clegg (HSC)
Christine Garner (TTUHSC)
Bibha Gautam (TTUHSC)
Naïma Moustaïd-Moussa (TTU)
Crystal Price (TTU)
Alexis R. Rodriguez (TTUHSC)
Alex H. Scoggin (TTU)

ORI WELCOME

Naïma Moustaïd-Moussa, Ph.D., FTOS, FAHA
Horn Distinguished Professor, Nutritional Sciences, College of Human Sciences
Associate Vice President for Research & Founding Director of the Obesity Research Institute (ORI), Office of Research & Innovation, Texas Tech University

Vice President-Elect, The American Society for Nutrition (https://nutrition.org/)

Prof. Naïma Moustaïd-Moussa is a Paul W. Horn Distinguished Professor in Nutritional Sciences, Associate Vice President for Research and Director of the Obesity Research Institute at TTU. She leads the Nutrigenomics, Inflammation and Obesity Research (NIOR) conducting basic and integrated nutrition and obesity research, with emphasis on the role of the endocrine function of adipose tissue (renin angiotensin system), heat shock proteins, and nutrient-gene interactions in metabolic diseases, breast cancer, aging, and Alzheimer's disease. Current research focuses on bioactive compounds (including fish oil, tart cherry anthocyanins, curcumin, and other polyphenols) that reduce obesity-associated white fat inflammation, activate brown fat, reduce systemic and neuroinflammation and aging-related metabolic dysfunctions, using cells, rodents, and model organisms. She published over 180 peer reviewed papers from research funded by federal agencies, foundations, as well as industry (NIH, USDA, the American Heart Association (AHA), the American Diabetes Association (ADA), an international Foundation (Qatar Foundation's National Research Funds, Empirical Foods, Inc). She is a Fellow of AHA (FAHA) and a Fellow of TOS (FTOS). She received several awards sponsored by the American Society for Nutrition (ASN) including the 2012 Outstanding Investigator award, 2015 Pfizer Consumer Healthcare Nutritional Sciences award, 2020 Korean Nutrition Society Award). She was awarded mentoring and scholarship awards by TTU: 2018 Nancy J Bell Outstanding Mentor Award, 2019 Outstanding Faculty Mentor for Undergraduate Research, 2020 Outstanding Researcher Award, 2021 Barnie E. Rushing J. Distinguished Faculty Research Award in STEM and in 2023, the COHS Wolfe International Scholars Award. She served for several years as the state of Texas as Region 1 representative on the statewide Live Smart Texas committee dedicated to obesity prevention and resources. In 2022, she was appointed to the Board on Agriculture & Natural Resources (BANR) of the National Academies of Sciences, Engineering & Medicine (NASEM). In 2023, she was elected as Vice President-Elect for ASN (A four-year term in presidential line; she will become President of ASN from Aug 2025 to Jul 2026, the first time that ASN elected a minority to the presidency).

Jannette M. Dufour
Associate Director, Obesity Research Institute, Chair for Department of Cell Biology and Biochemistry, University Distinguished Professor, Texas Tech University Health Sciences Center

Dr. Jannette M. Dufour received her PhD in Genetics and Cell Biology from Washington State University in 1999 and trained as a postdoctoral fellow with the Islet transplantation Group in the Surgical Medical Research Institute, Department of Surgery at the University of Alberta, Edmonton, Canada, from 1999-2005. The focus of her research is to explore the therapeutic potential of immune-privileged Sertoli cells as a means to improve outcomes of transplantation. Specifically, her lab is testing the feasibility of using immune privileged Sertoli cells for cell-based gene therapy and examining the mechanism(s) of Sertoli cell immune protection to improve the survival of insulin-expressing cells as a treatment for diabetes. She also has several collaborations with investigators at TTUHSC and TTU related to the role of bioactive compounds for the treatment of diabetes. Her research has been funded by several national and local agencies, including the NIH, American Diabetes Association, and Texas ARP, and has been selected for the cover photo for Cell Transplantation (2008). Spermatogenesis (2012), DNA and Cell Biology (2018), and Biomedicines (2023), and highlighted in Biology of Reproduction (2014) and Nature Medicine (2018). She has been invited to give seminars at several universities as well as at national and international meetings, including the American Society for Reproductive Immunology (2022, 2024), American Society of Andrology (ASA; 2007, 2016, 2023), Society for the Study Reproduction; 2012, 2016), NIAID (2017) and NIEHS (2017). She has received the TTUHSC President's Young Investigator Award (2011), the Outstanding Women Leader (OWL) Award from the West Texas Association for Women in Science (2013), the Harry M. Weitlauf Anatomy Teaching Award (2013), the Dean's Basic Science Teaching Award (2017), the President's Team Teaching Award (2019, 2020), and the Graduate School of Biomedical Sciences Dean's Teaching Award (2023).

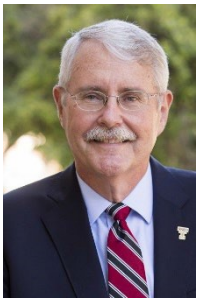
Chancellor Tedd L. Mitchell, M.D., Texas Tech University System

Tedd L. Mitchell, M.D., was named the fifth chancellor of the Texas Tech University System on Oct. 25, 2018.

As chancellor, Mitchell is the CEO of a nearly $3 billion, five-university higher education enterprise consisting of Texas Tech University, Texas Tech University Health Sciences Center, Angelo State University, Texas Tech University Health Sciences Center El Paso, and Midwestern State University. Collectively, the TTU System enrolls 63,000 students, operates on 24 academic locations statewide and internationally and has an endowment valued at $1.7 billion.

Mitchell works collaboratively with the TTU System Board of Regents, System Administration and each university president to enhance the TTU System's profile and support shared missions of advancing higher education, health care, research and community outreach. Additionally, Mitchell guides the TTU System's engagement with state elected officials in Austin and federal leaders in Washington, D.C., to further enhance funding and support.

Mitchell first joined the TTU System as the eighth president of TTUHSC in 2010. He held a dual appointment as chancellor and president for a year until deciding to close his tenure as the longest serving president in TTUHSC history on Nov. 1, 2019.



Joseph A. Heppert, Ph.D.
Vice President for Research & Innovation, Texas Tech University

Dr. Heppert is currently Vice President for Research and Innovation at Texas Tech University (TTU). His office is responsible for fostering research, scholarship, and creative activity at TTU; for promoting innovation, entrepreneurship, and technology transfer programs; and for regulatory oversight of research compliance and scholarly integrity. Previously, he served as Associate Vice Chancellor for Research at the University of Kansas (KU). He chaired the KU Chemistry Department from 2005-2009 and was the founding director of the University's Center for Science Education from 2001-2009. He is a Fellow of the American Chemical Society and currently serves on the American Chemical Society's Committee on Budget and Finance, and is on the institutional advisory board for the Cancer Prevention and Research Institute of Texas. Dr. Heppert's initial research focused on organo transition metal chemistry. This research result- ed in the isolation and characterization of the first class of air stable terminal transition metal carbide compounds. Dr. Heppert has also been active in projects to improve science teaching and science teacher preparation. He is past chair of the American Chemical Society's Commit- tee on Education. In this role he testified before the U.S. House of Representatives' Committee on Science and the National Science Board on science education policy issues. Dr. Heppert received a B.S. in Chemistry from San Jose State University in 1978, where he participated in heavy elements research at the Lawrence Livermore National Laboratory. He was awarded a Ph.D. in Inorganic Chemistry from the University of Wisconsin-Madison in 1982, studying under Donald Ganies. He completed postdoctoral training at Indiana University under the direction of Dr. Malcolm Chisholm. He joined the chemistry faculty at KU in 1985 and moved to Texas Tech University in 2017.

Lance McMahon, Ph.D.
Senior Vice President for Research & Innovation, Texas Tech University Health Sciences Center

Lance R. McMahon, Ph.D., is the Senior Vice President for Research and Innovation at Texas Tech University Health Sciences Center. He has a tenured appointment as Professor of Pharmaceutical Sciences in the Jerry H. Hodge School of Pharmacy, and Professor of Medical Education in the School of Medicine. He is chair of the TTUHSC Research Council, member of the Texas Tech Research Park Board, and member of the Steering Committee of the Center for Translational Neuroscience and Therapeutics. Dr. McMahon is committed to TTUHSC's vision to transform healthcare through innovation and collaboration, focusing on advancements in cancer, neuroscience, infectious disease, and cardiometabolic disorders. Dr. McMahon serves on the Department of Defense Chronic Pain Management Programmatic Panel of the Congressionally Directed Medical Research Program, and has over 20 years of service as regular and ad hoc study section member of the National Institutes of Health Center for Scientific Review. He has secured $25M in NIH funding for his research in behavioral pharmacology and central nervous system (CNS) drug discovery and development and has published 135 peer-reviewed publications. He has held leadership positions within the American Society of Pharmacology and Experimental Therapeutics and the American Association of Pharmaceutical Scientists.

Deborah J. Clegg, Ph.D.
Vice President for Office of Research, Texas Tech University Health Sciences Center El Paso

Dr. Clegg is a known expert in the field of obesity, sex hormones, and metabolism with a specific interest in nutrition and how it interacts with physiology. She has authored over 150 articles in impactful journals such as The New England Journal of Medicine, JAMA, American Journal of Physiology, and the National Kidney Foundation and is listed in the top 2% of the most cited/impactful investigators out of more than 6 million cited in science journals worldwide, according to a peer-reviewed database. Dr. Clegg is the Vice President for Research at the Paul Foster School of Medicine/Texas Tech Medical School in El Paso, Texas. Dr. Clegg and her research has been featured in many forms of media, to include the television program The View, and HBO series entitled 'Weight of the Nation', as well as in the popular press to include magazines such as Vogue, Mademoiselle, Ladies Home Journal, and Nature. Dr. Clegg has conducted her own basic science research as well as participated in clinical and translational research for over 25 years.

KEYNOTE SPEAKERS

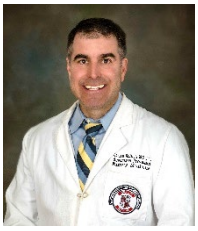
Introduction: Bibha Gautam, Ph.D., R.N., CNE, Associate Professor, School of Nursing, TTUHSC

Holly Wei, Ph.D., R.N., CPN, NEA-BC, FAAN
Dean and Professor, School of Nursing
UMC Health System Endowed Chair for Excellence in Nursing
Texas Tech University Health Sciences Center

"Using One Health Approach to Address Rural Health Challenges in West Texas?"

Dr. Holly Wei received her Ph.D. from the University of North Carolina at Chapel Hill. She is a Fellow of the American Academy of Nursing and actively shapes healthcare policy and promotes excellence in nursing. Her research program focuses on healthcare organizational culture, leadership development, clinician well-being, interprofessional collaboration, and health promotion across the lifespan. Dr. Wei has authored over 80 publications and delivered numerous keynote presentations. Her innovative nursing practice models and Convergent Care Theory have been adopted by healthcare systems, leading to significant enhancements in practice and patient care standards. As a distinguished scholar, Dr. Wei contributes extensively to professional journals as an editor and serves on advisory boards. She has held positions on the Board of Directors and various committees within national and international nursing organizations. Dr. Wei has served in multiple leadership roles in nursing before joining TTUHSC. Her visionary leadership and compassionate approach to nursing have garnered her numerous accolades, including the esteemed International Leininger Caring-Culture Award. Dr. Wei's leadership textbook, Visionary Leadership in Healthcare, was awarded the 2022 American Journal of Nursing (AJN) Book of the Year Award.

Introduction: Conrad Lyford, Ph.D., Professor, Agricultural and Applied Economics, TTU



Adrian Billings, M.D., Ph.D., FAAFP
Associate Academic Dean, Rural and Community Engagement
Senior Fellow of the F. Marie Hall Institute for Rural and Community Health
Texas Tech University Health Sciences Center

"Rural Health Care and Education: Investment Needed"

Dr. Adrian Billings, of Alpine, is the Chief Medical Officer of Preventative Care Health Services, a federally qualified health center, in the Big Bend, the Associate Academic Dean of Rural and Community Engagement and Senior Fellow of the F. Marie Hall Institute for Rural and Community Health at Texas Tech University Health Sciences Center. Dr. Billings has been a career long rural community physician along the rural Texas-Mexico border of west Texas. He is a National Health Service Corps Scholar alumnus and has remained in his NHSC site for his entire professional career of 17 years. Dr. Billings has served as a HRSA Special Government Employee on the National Advisory Council to the National Health Service Corps. Dr. Billings serves a Principal Investigator on a HRSA Behavioral Health Workforce Education Training Grant and co-PI on a HRSA Bureau of Health Workforce Hispanic Center of Excellence grant. Dr. Billings accolades include Texas Academy of Family Physician of the Year and the Association of Clinicians for the Underserved Clinician of the Year. Dr. Billings is also an elected school board trustee for rural Alpine Independent School District. Dr. Billings is passionate about enabling rural borne and educated students opportunities to enroll in health care training programs.

DATABASES/BIG DATA (TTUS faculty)

Moderator

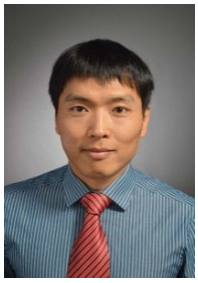
Alexis R. Rodriguez, B.S., Ph.D. Student, TTUHSC
Cell Biology & Biochemistry

Speakers

Chip Shaw, Ed.D., MPH, TTUHSC
Executive Director, Clinical Research Data Warehouse

***"*Introduction to the NIH *All of Us* Research Data"**

Dr. Shaw is the Executive Director of Clinical Research Data Warehouse at Texas Tech University Health Sciences Center. He earned his Master's Degree in Anatomy from Texas Tech University Health Sciences Center (TTUHSC) in 1994, his Doctoral Degree in Instructional Technology from Texas Tech University in 2002, and his Master's Degree in Public Health from Texas Tech University Health Sciences Center in 2016. He served in leadership roles in the Division of Information Technology from 2001 to 2017. Over the past 23 years, Dr. Shaw has been involved with classroom and laboratory instruction in the School of Pharmacy, School of Medicine, and the Department of Public Health. Since 2017, Dr. Shaw has worked to create a new resource for education and research at TTUHSC, the Clinical Research Data Warehouse (CRDW). For the last seven years through the CRDW, he has provided data extraction and analysis for students and faculty at TTUHSC using data from the electronic health record as well as national databases for use in various research projects.



Dawei Li, Ph.D., TTUHSC
Associate Professor, Immunology & Molecular Microbiology

"Viral sequence Detection in Genomic Sequencing Data"

Dr. Li is an Associate Professor at Texas Tech University Health Sciences Center. He obtained extensive training in genomics and bioinformatics. His prior genetic research has led to the identification of dozens of disease-associated genes. Many of the findings have been applied to translational research in both academia and industry. He recently developed a set of tools for virus-related sequence detection in human data, including the first virome-wide viral integration detection and novel method to identify endogenous retrovirus using high-throughput sequencing data.

Julie St John, DrPH, MPH, MA , CHWI, TTUHSC
Associate Professor, Julia Jones Matthews School of Population and Public Health

"Engaging Community in Research"

Julie St. John is a tenured Associate Professor in the Julia Jones Matthews School of Population and Public Health, Texas Tech University Health Sciences Center (TTUHSC), Abilene campus. She has her doctorate in public health from the University of Texas Health Science Center at Houston School of Public Health. Her research interests include: health status and quality of life improvement among diverse and rural populations through community health development and partnership approaches; health equity and disparities; scope of practice and training of Community Health Workers; addressing human trafficking through community capacity building; addressing maternal health disparities; and equipping future public health professionals through teaching, service, research, and practice. Dr. St. John has served as the principal and co-investigator on numerous projects in rural and underserved areas that utilized community based participatory research approaches. She is currently a co-investigator on a Texas DSHS Health Equity grant in Deaf Smith, Parmer, and Gray Counties; a co-principal investigator on an NIH maternal health grant in the Texas Panhandle region (VIBRANT MOMS); and principal investigator on a Cancer Prevention Research Institute of Texas colorectal cancer prevention grant. Dr. St. John completed a fellowship with the National Rural Health Association (NRHA) "Rural Health Fellows Program" and a Rural Scholar fellowship with The F. Marie Hall Institute for Rural and Community Health, TTUHSC. In April 2021, she published a textbook with Springer Publications, along with co-editors Wandy Hernandez-Gordon and Susan Mayfield Johnson, titled, "Promoting the Health of the Community – Community Health Workers Describing their Roles, Competencies, and Practice." Additionally, Dr. St. John also teaches several public health courses, participates in interprofessional education activities, and serves as a faculty leader on the TTUHSC Office of Global Health programs in Panama and Peru.

Mandana Pahlavani, Ph.D., Texas Woman's University & UT Southwestern Medical Center
Assistant Professor, Nutrition and Food Sciences & Adjunct Assistant Professor, Internal Medicine

"Extreme High Cholesterol Efflux is Linked to Anti-Inflammatory and Anti-Oxidative Functions of HDL than Extreme Low Cholesterol Efflux"

Mandana Pahlavani, Ph.D. is an Assistant Professor of Nutrition at Texas Woman's University in Denton, Texas. She recicded her PhD at Texas Tech University. She has a strong research background in areas of Nutrition, Obesity, Cardiometabolic health, and Inflammation. Her doctoral research focused on determining mechanisms by which omega 3 fatty acids (n-3) polyunsaturated fatty acids, primarily eicosapentaenoic acid (EPA), activate brown adipose tissue and induce the thermogenic marker, uncoupling protein-1 (UCP-1) to reduce obesity. She was awarded a United States Department of Agriculture (USDA) Postdoctoral Fellowship to investigate gene and miRNA analyses of mechanisms mediating anti-inflammatory effects of fish oil and dose-dependent effects of fish oil in obesity. Her second postdoc at UT Southwestern Medical Center (UTSW), supported by the NIH T32 training program focuses on patient-oriented research in cardiometabolic health. She was awarded American Heart Association (AHA) Postdoctoral Fellowship to perform deep phenotyping approaches to understand the role of lipid metabolism in cardiometabolic health. Her current research investigates the link between extreme cholesterol efflux capacity (CEC), anti-inflammatory, and antioxidant functions of HDL in a diverse cohort of Dallas Heart Study. In addition, she will investigate the use of bioactive food compounds and nutrients such as polyphenols, antioxidants, and functional foods in reducing cardiovascular disease (CVD), obesity, and inflammation.

Caleb Phillips, Ph.D., TTU
Associate Professor, Department of Biological Sciences
Curator of Genetic Resources, Natural Science Research Laboratory, Museum of TTU

"The Integration of Microbiomes and Host Genomics in Infectious Disease"

Caleb Phillips is an Associate Professor in the Department of Biological Sciences at TTU and is the Curator of Genetic Resources at The Museum of TTU. The Phillips Lab uses DNA sequencing approaches to understand factors that shape host microbiomes. Major projects include studies of human chronic wound patients and how their DNA influence the microbes that infect them, as well as studies of gut microbiome structure of Chiroptera (bats) in the context of energetics and conservation. A major initiative is the development and care of the accredited Genetic Resources Collection at The Museum that enables this research as well as that of others at TTU and elsewhere.

FACULTY SHORT TALKS (TTUS faculty)

Moderator

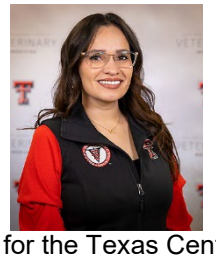
Elyvine Ingabire-Gasana, Ph.D. Candidate – TTU
Nutritional Sciences

Speakers

T. Annelise Nguyen, MBA, Ph.D., TTU School of Veterinary Medicine
Diplomate of the American Board of Toxicology, Fellow of the Academy of Toxicological Sciences, Associate Dean for Research

"Overview of One Health Sciences Ph.D. Program"

Dr. Annelise Nguyen currently serves as associate dean for research and professor at Texas Tech University's School of Veterinary with board certification by the American Board of Toxicology. She received a Bachelor of Science in Molecular and Cellular Biology and a doctorate in Toxicology from Texas A&M University. She completed a postdoctoral fellowship from the National Eye Institute. Dr. Nguyen joined the Toxicology group at Kansas State University, College of Veterinary Medicine, where her research interests continued in the field of cancer biology, focusing on the role of gap junctional intercellular communication. Recently, her work extended to the field of spheroid/organoid development, utilizing the new technology of PGMatrix to recapitulate 3D human tumor-like spheroids. She joined Texas Tech University in 2020 with the effort to establish comparative models such as canine mammary cancer and feline kidney cancer and collaboratively created the first-in-the-nation Ph.D. program in One Health Sciences. She is an inventor of US patents entitled "Compounds affecting gap junction activity" and "Peptide-albumin hydrogel properties and its applications." She obtained over $2.5 million in sponsored research activities from federal agencies as well as private sectors. She was the recipient of 2009 K-INBRE-Kansas Technology Enterprise Corporation Scholar, 2011 University Distinguished Faculty Award for the Mentoring Undergraduate Students in Research, 2012 Kansas State University Women of Distinction, 2017 Inspiring Leader in STEM Award of the INSIGHT Into Diversity, 2019 John Doull Award for distinguished contribution to the field of toxicology, the Class of 2021 of the Academy of Toxicological Science, and 2024 Senior Member of the National Academy of Inventors. She teaches graduate and veterinary classes, including Toxicology, Environmental Toxicology, Environmental Health, Ecotoxicology, and Cancer Pathogenesis.



Heidi Villalba, Ph.D., School of Veterinary Medicine
Assistant Professor of Neurophysiology and Pharmaceutical Science

"Sex Differences in Preclinical Models of Ischemic Stroke and Repurposing Drugs"

Dr. Heidi Villalba is an Assistant Professor of Neurophysiology and Pharmaceutical Sciences at Texas Tech University's School of Veterinary Medicine. She is also a Leadership Team member for the Texas Center for Comparative Cancer Research (TC3R).

Dr. Villalba is a native of the Texas Panhandle. She earned her bachelor's and master's degrees from West Texas A&M University before completing her PhD in Pharmaceutical Sciences at Texas Tech University Health Sciences Center, Jerry H. Hodge School of Pharmacy. During her post-doctoral training under Dr. Abbrusato, she was awarded a Diversity Supplement grant from the National Institute of Health. Her teaching centers on Veterinary Physiology and Leadership Skills, while her research focuses on neuroscience, neuroprotective agents, brain cancer (such as glioblastomas), and sex differences in ischemic stroke recovery.

Dr. Villalba is affiliated with several professional organizations, including the American Stroke Association, the American Association for Cancer Research, the Texas Veterinary Medical Association, and the National Hispanic Science Network. Recently, she received a Loan Repayment Program (LRP) award from the National Institute of Neurological Disorders and Stroke (NINDS) for her
research in emerging areas critical to human health.

Carolyn E. Arnold, DVM, Ph.D., DACVS, School of Veterinary Medicine
Professor, Large Animal Surgery

"The Effect of Antibiotics on the Equine Hindgut Microbiome"

Dr. Arnold received her DVM from Michigan State in 1998. She completed residency training in large animal surgery from the University of Pennsylvania in 2003 and worked as an equine surgeon at Texas A&M until 2022. She received a PhD in Biomedical Sciences from Texas A&M in 2020, working with the Gastrointestinal Laboratory. Her research interests include the microbiome and function of the horse's hindgut. She is a professor at the School of Veterinary Medicine in Amarillo.

Kalavathy Rajan, Ph.D., TTU
Assistant Professor, Fiber and Biopolymer Research Institute

"Establishing an Agro-based Bioeconomy in the South High Plains"

Dr. Kala Rajan (she/her/hers) is a new Assistant Professor at the Fiber and Biopolymer Research Institute, in the Department of Plant and Soil Science, Texas Tech University, Lubbock. She has published over 36 peer-reviewed research articles and contributed notably to the field of "multi-functional bio-product development from agro-forestry residues" in her alma matter, i.e., the University of Tennessee and the University of Arkansas. With the goal of advancing a sustainable bioeconomy in the South High Plains and beyond, Dr. Rajan is developing a research program encompassing advanced bio-based manufacturing, and courses related to biorefining and biodegradable food packaging. Eventually, Dr. Rajan wishes to succeed in creating public awareness about renewable consumer goods and educate a workforce that will advance a circular bioeconomy.

Lindsey Slaughter, Ph.D., TTU
Associate Professor Soil Microbial Ecology/Biochemistry, Plant and Soil Science

"Enhancing Soil Ecology and Plant-microbe-soil Interactions for Healthy Soils, Plants, and People in Semi-arid Ecosystems"

Dr. Lindsey Slaughter is an Associate Professor of Soil Microbial Ecology and Biochemistry in the Department of Plant and Soil Science in the Davis College of Agricultural Sciences and Natural Resources at Texas Tech University in Lubbock, TX. She joined the faculty at Texas Tech in 2016. She received her Ph.D. in Soil Science from the University of Kentucky in Lexington, KY in 2016, her MS degree in Plant and Soil Science from the University of Kentucky in 2012, and her BS degree in Natural Resource Management from the University of Tennessee at Martin in 2010. Dr. Slaughter conducts research and teaches introductory and advanced courses in soil science and soil microbial ecology and was recently awarded the 2023 Davis College Teaching Award.

She currently serves as an Associate Editor for the Soil Biology and Biochemistry (S03) division of the Soil Science Society of America Journal and was selected as an Outstanding Associate Editor for the journal in both 2022 and 2023. She is an active member of the Soil Science Society of America and was recently elected to serve as the incoming chair of the S03 division for the ASA-CSSA-SSSA annual meetings in 2024 and chair in 2025. She also serves as a Technical Specialist for the Soil Health Institute in the Texas High Plains region to assist growers with questions related to soil health management and soil ecology.

At Texas Tech University, the TTU Soil Ecology Lab conducts research that helps understand how plant-microbe-soil interactions are linked to improving soil health and sustainability in semi-arid environments. An example of this is a project that investigates how soil microbial communities contribute to greenhouse gas fluxes in sustainable pasture ecosystems and how these dynamics are regulated by forage management and nitrogen availability. This specifically examines the controls on methane fluxes in semi-arid pasture soils and how including legumes as a source of slowly-available mineralized nitrogen in soils potentially creates a stronger soil sink for methane that can help mitigate the climate impact of animal agriculture. In addition to investigating fundamental relationships between plants and soil microbes and how these contribute to ecosystem functioning and response to land management, her work seeks to help reverse soil degradation and create resilient, climate-smart agricultural systems through enhanced biological networks and plant-soil interactions.

Zemfira N. Karamysheva, Ph.D., TTUHSC
Associate Professor, Cell Biology and Biochemistry

"mRNA Translation Regulation in Health and Disease"

Dr. Zemfira Karamysheva got her PhD degree in Molecular Biology at Moscow State University and did a first postdoc at University of Tokyo in Japan and a second postdoc at Texas A&M University. She was a research faculty at UT Southwestern Medical Center and TTU prior joining TTUHSC. Currently she an associate professor at the Department of Cell Biology and Biochemistry. Dr. Karamysheva has published 36 papers including papers in prestigious journals such as Cell, NAR, EMBO J and recent Nature Communications. Her publication in Nature Communications has been chosen by editor as the best research article and has been recognized in the news multiple times at TTU and TTUHSC. Her research is funded by NIH and private Prader-Willie foundation. Dr. Karamysheva has multiple collaborations at TTU as well as at TTUHSC and University of Antioquia in Colombia. Today she will give a presentation on mRNA translation regulation in health and disease.

FUNDING & RESEARCH INITIATIVE HIGHLIGHTS (TTUS faculty)

Moderator:

Kay J. Tindle, Ph.D., TTU
Associate Vice President, Office of Research & Innovation

Dr. Kay Tindle currently serves as the Associate Vice President for Research Strategy in the Office of Research & Innovation. In this role, she facilitates collaborations that cross departmental and institutional boundaries, liaises with industry and federal and state agencies, and provides project management for the development of major research strategies for Texas Tech. Dr. Tindle also oversees the Office of Research Development and Communications, Strategic Research Intelligence, the Texas Produced Water Consortium, and the STEM Center for Outreach, Research and Education.

Prior to joining Texas Tech, Dr. Tindle served at the University of Central Oklahoma, interned at the Oklahoma State Regents of Higher Education, and taught English around the world (Japan, China, Saudi Arabia, South Korea). She still enjoys traveling with her husband, and someday, they might also take their kids along on these adventures.

Speakers:

ARPA - H

Carleigh Smith, TTUHSC
Senior Director, Division of Research Innovation, Collaboration, and Entrepreneurship

Carleigh serves as the Senior Director for the Division of Research Innovation, Collaboration, and Entrepreneurship at Texas Tech University Health Sciences Center (TTUHSC), where she focuses on facilitating research development and fostering innovation within the institution. With over 13 years of experience in higher education, she brings a wealth of knowledge and expertise to her role.
Her journey began with seven years of combined experience in research development and executive support. During this time, she honed her skills in resource allocation, strategic planning, and partnership cultivation. This multifaceted experience laid a solid foundation for her transition into her current role.
In her current position, Carleigh remains dedicated to facilitating strategic partnerships, as evidenced by her support of TTUHSC's engagement with ARPA-H. She has played a vital role in facilitating TTUHSC's spoke membership, contributing to the institution's involvement in ARPA-H initiatives.
Driven by a passion for advancing health care research and innovation, Carleigh approaches her work with positive energy and a collaborative spirit. Her commitment lies in making meaningful contributions to TTUHSC's mission, guiding the institution towards excellence in research, innovation, and collaboration.

Strategic Research on One Microbiome

Naïma Moustaïd-Moussa, Ph.D., FTOS, FAHA, TTU
Horn Distinguished Professor, Nutritional Sciences, College of Human Sciences
Associate Vice President for Research & Founding Director of the Obesity Research Institute (ORI), Office of Research & Innovation

Food is Medicine

Christine D. Garner, Ph.D., RD, CLC, TTUHSC
Assistant Vice President for Research, Assistant Professor, Principal Investigator for VIBRANT MOMS, Obstetrics and Gynecology, InfantRisk Center

Christine D. Garner, Ph.D., RD, CLC is Assistant Vice President for Research, an Assistant Professor of Obstetrics and Gynecology, and conducts research in the InfantRisk Center at Texas Tech University Health Sciences Center in Amarillo, TX. She obtained both her Master's and Doctoral degrees in Nutrition at Cornell University, and she trained and worked as a Registered Dietitian in Pediatrics at the University of California San Francisco. Dr. Garner's research focuses on maternal and child health with a nutrition lens during pregnancy, breastfeeding, infancy, and early childhood – the "first 1000 days." She is currently leading an NIH-funded community-based research project to address maternal health disparities in the Texas Panhandle. Dr. Garner is experienced in human subjects research, including investigator-initiated trials, hospital-based interventions, qualitative (formative) research, survey research, and community-based interventions. She has worked with UNICEF, served on the board of the New York State Perinatal Association, and served as the Research Coordinator for the Academy of Nutrition and Dietetics Women's Health Dietetics Practice Group. Christine is a mom & an active researcher, author, and editor on topics of nutrition, pregnancy, and women's health, including the online reference for clinical and medical professionals UpToDate®.

Rama Chemitiganti, M.D., TUHSC Permian Basin
Director, Center of Excellence for Diabetes and Endocrinology, Eliese Teasdale Endowed Chair, Internal Medicine

Doctor Rama Chemitiganti is the Director of the TTUHSC Center of Excellence for Diabetes and Endocrinology and Eliese Teasdale Endowed Chair at Texas Tech University Health Sciences Center in Odessa, Texas. He focuses on providing high-quality care in person and on improving access to similar care to people residing in rural West Texas and Eastern New Mexico, by creating digital innovations. He is instrumental in setting up two free clinics in the Permian Basin. These clinics provide much-needed primary care and specialty care for diabetes and other hormonal disorders for persons without medical insurance. His research focus is on identifying mechanisms to prevent and delay diabetes and its dreaded complications. His current research examines Food as Medicine initiatives and racial and ethnic differences in treatment responses to novel anti-diabetes and anti-obesity medications. He is the principal investigator in a trial evaluating the use of Freehand 3D Tomographic Ultrasound Thyroid Imaging and Novel Neural Network Algorithms in the prognostication of Thyroid Nodules.

Dr. Chemitiganti has received multiple seed grants and two endowments to pursue his research and service mission. Dr. Chemitiganti is a Fellow of the American College of Physicians (FACP) and a Fellow of the Endocrine Alliance Academy (FEAA). His scholarship and teaching were recognized through several awards, including the "Dean's Distinguished Faculty Service Award. He was also inducted into the Alpha Omega Alpha Honor Medical Society (ΑΩΑ).

Sorghum: One Health Food System

Yinping Jiao, Ph.D., TTU
Assistant Professor, Institute for Genomics of Crop Abiotic Stress Tolerance, Plant and Soil Science

Dr. Yinping Jiao is an Assistant Professor at the department of Plant and Soil Science and the Institute for Genomics of Crop Abiotic Stress Tolerance, Texas Tech University since 2020. Her research group investigates the genetic diversity and regulatory mechanisms of important agronomical traits in sorghum (Sorghum bicolor), with the goal of facilitating breeding. One of the focuses of her lab is to identify genes regulating the nutrition synthesis and grain quality in sorghum to meet different market needs.

Before joining Texas Tech, she did postdocs at Cold Spring Harbor Laboratory and USDA-ARS working on maize and sorghum functional genomics. She got her PhD in Plant Genetics and Breeding at China Agriculture University in 2012, investigating genetic diversity in maize populations.

Jannette M. Dufour, Ph.D., TTUHSC
Associate Director, Obesity Research Institute, Chair for Department of Cell Biology and Biochemistry, University Distinguished Professor

Oak-Hee Park, Ph.D., TTU
Research Assistant Professor, College of Human Sciences & Adjunct Assistant Professor, Graduate Faculty, Nutritional Sciences

Oak-Hee Park has been conducting various research projects related to nutrition, food, health, and consumer behavior. Her current research areas are focusing on Nutrition Education, Food Environment, Public Health, Obesity Prevention, and Sustainable Food System. Dr. Park had worked on the East Lubbock Promise Neighborhood Grant funded by the United States Department of Education from 2013 to 2019. As a Co-PI, she established the first community-based family cooking program for underserved populations in Lubbock, Texas. She also conducts a food environment study in the Lubbock County using the NEMS-S and NEMS-R surveys, and has actively led an obesity prevention project (Sustainable Life Skills to Reduce Obesity) for adolescents at a Title I school to promote individual's self-efficacy about healthy cooking that may encourage adolescents to reduce risky eating behavior, leveraging body acceptance and mindful eating practices for the prevention of obesity. Currently, Dr. Park and her research team expand the obesity prevention project at rural Title I schools to educate next generation who will be a model for healthy lifestyle movement in rural communities in west Texas. Other ongoing research projects include "Sorghum: Opportunities as a Sustainable Crop for Human Consumption in the U.S.", "Nutrition Bench-to-Community Engaged Scholars in Texas (Nutrition BEST) REEU Program", "Ugly Fruits and Vegetables/Sustainable Food Systems Research", and "College Student's Hunger, Resources and Recovery".

All of Us Research

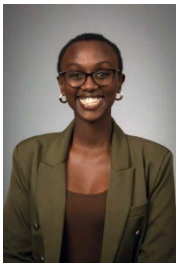
Anna M. Eiring, Ph.D., TTUHSC El Paso
Assistant Professor, Center of Emphasis in Cancer, Molecular and Translational Medicine, Paul L. Foster School of Medicine

Dr. Anna Eiring is an Assistant Professor in the Department of Molecular and Translational Medicine at Texas Tech University Health Sciences Center El Paso. With more than 20 years of experience in research and academia, Dr. Eiring's laboratory investigates mechanisms of disease progression and drug resistance in myeloid malignancies, as well as cancer health disparities at the US/Mexico border. She is a current participant of the All of Us Evenings with Genetics Program, and will share about her projects utilizing this robust database.

STUDENT/POSTDOC PROFESSIONAL DEVELOPMENT SESSION: ACADEMIC/GOVERNMENT OPPORTUNITIES

Sponsored by the Graduate Nutrition Organization (GNO), TTU Graduate School & TTUHSC Graduate School of Biomedical Sciences (BSBS)

Panel discussion: Chaired by



Elyvine Ingabire-Gasana, Ph.D. Candidate, TTU
Nutritional Sciences

Elyvine Ingabire-Gasana is a third-year Ph.D. Candidate pursuing Nutritional Sciences at Texas Tech University. She holds a Bachelor of Science in Nutritional Sciences and a minor in Women and Gender Studies from Michigan State University.

Gasana is currently serving as the president of the graduate nutrition organization at TTU for the 2023-2024 academic year. Gasana is passionate about alleviating the effects of food insecurity, particularly among children and women. Before joining Texas Tech, Gasana served as a zero-hunger intern for the Congressional Hunger Center and CARE, USA, and in Rwanda's National Early Child Development program, an agency that fights against chronic malnutrition in Rwanda. Gasana's dissertation project is about assessing the effect of harvest lentil vegetable blend coupled with a theory-based nutrition education intervention in alleviating malnutrition among children 6-59 months in Northwest Kenya.

Alexis R. Rodriguez, Ph.D. Student, TTUHSC
Cell Biology and Biochemistry

Alexis R. Rodriguez is currently a PhD student in the Department of Cell Biology and Biochemistry at Texas Tech University Health Sciences Center. Received her BSA in Biology at the University of Texas at Austin in 2020 and MS in Biotechnology from Texas Tech University Health Sciences Center in 2022. She is a TTUHSC GSBS Dean's Scholar recipient and is currently serving as the treasurer of the TTUHSC Graduate Student Association. Her current research focuses on studying the immune privilege of Sertoli cells to improve the outcomes of allo- and xeno-transplantation. Additionally, she is studying the mechanism by which transplanted Sertoli cells protect co-transplanted islet cells as a treatment for diabetes. Research interests include studying Sertoli cell immune privilege and immunoprotection of transplanted cells and examining the use of Sertoli cells to protect co-transplanted islet cells. Future research collaboration interests are transplantation, immune regulation and diabetes.

Panelist:

Paule Valery Joseph, CRNP, Ph.D.
Chief, Tenure-Track Investigator, Section of Sensory Science and Metabolism (SenSMet)
Division of Intramural Clinical and Biological Research (DICBR)
National Institute of Alcohol Abuse and Alcoholism, Bethesda, MD

Dr. Paule V. Joseph is a 2019 Lasker Scholar and National Institutes of Health (NIH) and Distinguished Scholar. She is Chief of the Section of Sensory Science and Metabolism (SenSMet) in the Division of Intramural Clinical and Biological Research (DICBR) at the National Institute on Alcohol Abuse and Alcoholism (NIAAA) with a dual appointment at the National Institute of Nursing Research (NINR). This role involves leading a team of scientists and researchers dedicated to understanding how the sensory system (smell and taste) connects with metabolism and influences health outcomes. Before her tenure track position, she was an Assistant Clinical Investigator at NINR. Dr. Joseph received an AAS in Nursing at Hostos Community College, a BSN from the College of New Rochelle, a Master of Science with a specialty as a Family Nurse Practitioner from Pace University, and an Executive Master of Business Administration from Quantic School of Business. She completed her PhD from the University of Pennsylvania and conducted her PhD. work at the Monell Chemical Senses Center. She then completed a Clinical and Translational Postdoctoral Fellowship at the NINR supported by the Office of Workforce Diversity. Her program of research aims to understand neurological and molecular mechanisms underlying chemosensation (taste, smell & chemesthesis), motivational pathways of ingestive behaviors, and how they might differ with different diets, individuals with obesity, and alcohol and substance use disorders.

Kate J. Larson, Ph.D.
USDA ARS Research Leader, Retired
Affiliate Graduate Faculty, Human Nutrition, Food and Animal Sciences, College of Tropical Agriculture and Human Resources, University of Hawai‘i at Mānoa

Dr. Larson has a unique combination of training in obesity, adipose tissue biology, epigenetics, and nutritional immunology, which she has applied to novel experiments using cell culture and animal obesity models. Focusing on the functions of specific adipose tissue cell types that are important in obesity-associated increases in inflammatory factors and adipose tissue epigenetic regulation related to adipose tissue growth, Dr. Larson’s highly innovative research constitutes a new approach to the study of the metabolic basis for obesity-driven disease. Expanding on these achievements, she has discovered physiological and epigenetic mechanisms underlying maternal and postnatal diet-induced obesity of offspring and associated metabolic dysfunctions. Her research has enhanced an understanding of the obesity-inflammation axis affecting chronic disease and has stimulated research in this area by other investigators.

Dr. Larson is internationally recognized for her work in the area of obesity, adipose tissue biology, and adipose tissue inflammation and her contributions have been recognized via an invitation to the Steering Committee of the American Society of Nutrition Nutritional Immunology Research Interest Section and at the international level by invitations to serve on the Program Committee of the Obesity Society, as Chair of the Obesity Society Cell and Molecular Track, as Chair and Co-Chair at several national meetings of Experimental Biology and the Obesity Society, and on the Expert Panel for the Inflammation and Obesity of the FASEB/Life Science Research Office. She served on the Inflammation and Nutritional Science for Programs/Policies and Interpretation of Research Evidence (INSPIRE) Working Group for NIH. She has served on several editorial boards of national and international journals, including the Journal of Nutrition, Frontiers Nutrition and Nutritional Immunology, Scientific Reports, American Journal of Physiology, Journal of Nutritional Biochemistry, and International Scholarly Research Network Nutrition Journal and is a guest editor of Mediators of Inflammation. Dr. Larson has been invited to numerous national and international meetings to speak about her research and received several awards for her contributions to the area of obesity and metabolic disorders.

Within two years of her appointment as USDA ARS scientist, Dr. Larson was appointed to Lead Scientist of the Biology of Obesity Prevention project team. As a Lead Scientist, she directed her team to achieve significant research goals, including the successful completion of a USDA ARS intramural project, writing multiple manuscripts, establishing collaborations with scientists at local (University of North Dakota School of Medicine), national (Tufts, Iowa State, Texas Tech), and international (Chongqing University and Third Military Medical School, China) Universities. Dr. Larson retired from her Research Leader position at USDA ARS Grand Forks Human Nutrition Research Center, in October 2022. She currently serves as a graduate faculty of the Department of Nutritional Science at the University of Hawaii, Manoa.

Brandt L. Schneider, Ph.D., TTUHSC
Dean of Graduate School of Biomedical Sciences & Professor, Medical Education and Cell Biology and Biochemistry

Brandt has served as the Dean of the Graduate School of Biomedical Sciences since 2013 and has been a faculty member since 1999. He is a tenured Professor in the Departments of Medical Education and Cell Biology and Biochemistry. His research involves genetic analyses of mechanisms of yeast cell cycle control and their role in cellular lifespan. He is currently the Co-Director with Dr. Kerry Gilbert of the Institute of Anatomical Sciences. Brandt is an avid golfer and loves spending time with his family.

UNDERGRADUATE STUDENTS

POSTER #1

Infants' Dietary Exposure to Toxic Levels of Arsenic: Implications for Chronic Health Outcomes
Aarthi Annamalai, Shubhra Bhattacharjee, Jeremy D. Bailoo, Amrika Deonarine
Civil, Construction, and Environmental Engineering, TTU

Multiple epidemiological studies have found associations between early-life arsenic exposure and childhood mental health-related outcomes such as anxiety, depression, and deficits in executive function. Arsenic exposure from food is expected to be about three times higher for infants and young children than for adults, in part because their intake per unit body mass is higher and their dietary diversity (i.e., the kinds of foods that they eat) is lower than adults. Using inductively coupled plasma mass spectrometry (ICPMS), we evaluated the total arsenic concentration of commonly consumed infant products (formula, teethers and rice cereals) across representative brands (e.g., Similac, Gerber, Enfamil, Kirkland, and Earth's Best) and lots of production. The total arsenic content in infant formula ranged from 2.8-15 ppb, in teethers from 42-314 ppb, and in rice cereals 11-116 ppb. The total arsenic concentrations largely exceeded the 10-ppb regulatory level of arsenic in water; no regulation exists for total arsenic in foods. Arsenic content was generally consistent within brand and across manufacturing lots. As both rice cereals and teethers are primarily rice-based products, we predict, and will confirm using high performance liquid chromatography (HPLC)-ICPMS, that the majority of arsenic in these foods is inorganic arsenic, which is highly toxic and can lead to hypomethylation, DNA damage, neurotoxicity, and chronic inflammation. Our results highlight that infants are likely chronically exposed to arsenic during sensitive periods of organ development which may predispose them to deleterious health outcomes, such as mental illness in adolescence.

POSTER #2

Attitudes Towards Exclusively Breastfeeding among White Lactating Women in South Africa: An Exploratory Pilot Study
Sarah Bryant, Sara Kiros, Mahdieh Nazari, Wilna Oldewage-Theron
Nutritional Sciences, TTU

The purpose of this study was to examine white mother's perceptions to EBF as opposed to formula feeding in SA because of shortage of information available. This study was conducted in primary healthcare facilities. A purposive sample of 55 lactating women, mostly white, completed the validated IOWA infant feeding attitude scale (IIFAS), current feeding practices questionnaire, and a validated socio-demographic and economic questionnaire. The IIFAS was analyzed using standardized methods and the feeding practices examined the frequency of EBF during the first 6 weeks post-partum. IBM SPSS, version 29.0 was used for statistical analysis. The average age of the respondents was 30.8 years. 95.59% of the women were married, 5.56% were single, and 1.86% were widowed. IIFAS responses showed that 100% of the mothers had favorable responses to breastfeeding over formula feeding and found that breast milk was cheaper than formula (mean response 4.93/5), recognized that breast milk is more easily digested than formula (mean response 4.84/5), and is the ideal food for babies (mean response 4.73/5). During week 1, 85.11% of the women breast fed their babies this progressively increased to 97.82% during week 4 and 5 respectively. After 6 weeks, 92% of the women were exclusively breastfeeding. More research is needed in a larger sample that includes women from different backgrounds to understand the barriers and enablers of EBF and inform the implementation of interventions for lactating women in SA.

POSTER #3

Food Security, Health, and Social Impacts of COVID-19 on the Lives of University Students

Barbara Castillo, Kenneth Rogers & Oak-Hee Park, Ph.D.
Human Sciences, TTU

The COVID-19 pandemic posed many challenges, such as uncertain nutritional security, financial burdens, social and environmental isolation, and physical and mental health problems for university students. Pre-pandemic, 24.8% of college students were already food insecure, indicating insufficient access to nutritious food. The food insecurity rate for university students heightened?(approximately 59.6%) during the pandemic, underscoring college students' vulnerability. This study's aim was to examine the effects of COVID-19 among college students regarding their financial capability, food shopping, physical and mental health, and academic performance. Through a university's advertisement, over 500 college students were recruited for a cross-sectional study administered via a Qualtrics survey, conducted April-June 2022. Demographics, a validated USDA 10-item food insecurity questionnaire, and 4 open-ended questions (financial ability, food shopping, health, and academic performance) were collected. Descriptive statistics and thematic analysis were utilized to analyze data. A conceptual map was generated using codes, themes, and subthemes in relation to constructs of Social Cognitive Theory. Seven themes were identified: Financial capability, socialization needs, and impacted health and wellness (personal); environmental risks and unstable food supply (environmental); pragmatic food purchases and decreased health maintenance (behavioral). Among 365 participants, 14.1% experienced food insecurity, which was linked to decreased purchasing power due to reduced income. Coping strategies included substituting purchases, opting for cheaper, and less nutritious options. Urgent socialization needs and consequences of an unstable food supply impacted health and wellness, and food shopping habits. The findings emphasize the importance for universities to screen for food insecurity and implement tailored interventions for at-risk students.

POSTER #4

Effects of Fish Oil on Liver Tissue in an Amyloidogenic Alzheimer's Mouse Model

Bryan Estrada, Ariana Aranda, Yasmin Amin, Ashti Morovati, Mahsa Yavari, Latha Ramalingam, Breanna Harris, Shane Scoggin, Yujiao Zu, Naïma Moustaïd-Moussa
Nutritional Sciences, TTU

Background: Alzheimer's Disease (AD) is a neurodegenerative disease caused by atypical aggregation of amyloid beta (Aß) and tau proteins in the brain. Obesity and associated metabolic dysfunctions are heavily implicated as risk factors for AD. The liver has a central role in regulating metabolism in the body. Our lab previously reported the protective effect of eicosapentaenoic acid (EPA), an omega-3 polyunsaturated fatty acid from fish oil, in reducing circulating Aß levels. However, the underlying mechanism behind this phenomenon remains unknown. Hence, we hypothesized that the above anti-amyloidogenic effect of EPA is partly mediated through the improvement of lipid metabolism, including lipogenesis reduction and lipolysis enhancement, in the liver.

Methods: Two-month-old male and female APPswePS1E9 transgenic (TG) and non-TG littermates (WT) were randomized to low-fat (LF), or high-fat (HF) supplemented with or without 36g EPA/kg diet (HF-EPA) for 8 months. Weekly body weight and body composition were recorded. At study termination, liver tissues were collected for histology, protein, and gene analyses.

Results: Histological images of liver harvested from males in the HF-EPA group of both genotypes appeared to have fewer and smaller lipid droplets compared to the mice in their HF group counterparts. In males, compared to LF, HF-EPA showed trends towards reduced expression of acetyl-CoA carboxylase alpha (ACACA) ($p = 0.07$), which is involved in de novo synthesis of fatty acids. In WT females, the mRNA level of ACACA was reduced in the HF-EPA group compared to the mice in LF ($p<0.05$) and HF ($p<0.05$) groups. Analyses of the liver tissue at the protein level are currently ongoing.

Conclusion: Fish oil supplementation reduced hepatic fat accumulation and genes related to fatty acid synthesis. Our findings warrant further studies on the effects of fish oil in reducing the effects of a high-fat diet and the risk of AD.

POSTER #5

Body Composition and Fruit and Vegetable Intakes of Freshmen and Sophomores

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Objective: This study aims to investigate the change in fruit and vegetable (F&V) consumption and body composition among freshmen and sophomores over a six-month period. Methods: A cross-sectional study involved 58 freshmen and sophomores. F&V intake was measured using skin carotenoid levels with a veggie meter. Body composition was evaluated via bioelectrical impedance analysis (BIA). Data collection occurred during October 2022 and April 2023. Statistical analyses were performed using IBM SPSS version 29. The McNemar test compared categorical variables between baseline and 6-month follow-up, while the paired Wilcoxon signed-rank test examined continuous variables. A significance level of $p < 0.05$ was applied.

Results: Most of the sample were women (72.41%). Freshman students comprised 58.62% of the sample. Findings indicated no significant differences in skin carotenoid score or fat mass between baseline and 6-month follow-up ($p=0.46$ and $p=0.254$, respectively). However, median muscle mass increased significantly ($p=0.047$) from 97.1(87.15; 111.7) lbs at baseline to 99.3(88.5; 113.5) lbs at follow up.

Significance: The transition to college brings significant changes in dietary habits and lifestyle behaviors. By investigating F&V consumption and its impact on body composition, the study contributes to understanding this demographic's health behaviors during a crucial transition period.

Conclusion: Our study did not find significant fruit and vegetable consumption changes over the specified period. Future research with larger sample sizes and more extended study periods would allow for a more comprehensive examination of the effects of F&V consumption on various health parameters, which may play a crucial role in promoting healthier body composition outcomes in this population.

POSTER #6

Exploring the Change in Fruit and Vegetable Intakes Among Freshmen and Sophomore College Students During a Six-month Period: A Pilot Study

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Freshmen and sophomore college students find themselves needing to acclimate to a different setting and establish connections. Currently, there are conflicting reports regarding dietary, weight, and Body Mass Index (BMI) changes among first- and second-year college students. This study aims to investigate how access to on-campus dining facilities, facilitated by dining plans, affects the fruit and vegetable intake of lower-level college students. This study was conducted between September 2022 [baseline] and April 2023 [follow up]. A prospective cohort study was undertaken among 58 freshmen and sophomore students. Dietary intake was assessed using questions validated from Youth Risk Behavioral Surveillance System questionnaire (YRBSS). Body weight and height were measured through calibrated weight scales and stadiometer, measurements used to calculate BMI. Outcome measures were changes in the skin carotenoid veggie meter scores, measured at baseline and follow-up. The R language within the R-Studio environment (Version 2023.09.1+494) was used for all statistical analyses. A total of 58 students were included in the analysis, majority being female (72.41%). Freshman and on-campus students comprised 58.62% and 62.07%. 77.59% of the students had university dining plans and 22.41% did not. The results indicated that there were no notable differences in BMI between baseline and follow-up. No statistically significant differences in subjective measurement of fruit, vegetable, and fast-food intake at baseline and follow-up ($p>0.05$). The findings suggest no statistically significant differences. A larger study is recommended for a longer period and with more participants for representative results.

POSTER #7

Postnatal Depression and Breastfeeding Self-efficacy Among Lactating White Women in South Africa: An Exploratory Study

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Exclusive breastfeeding (EBF) rates are low (32%) in South Africa (SA) and a paucity of information exists about EBF among white women in SA. The purpose of this exploratory study was to examine the prevalence of postnatal depression and breastfeeding self-efficacy of lactating women in Gauteng province. A convenience sample of 55 lactating women completed the validated sociodemographic and economic-, Breastfeeding Self-Efficacy Scale (BSES), and Edinburgh Postnatal Depression Scale (EPDS) questionnaires. Data were analyzed using IBM SPSS, version 29.0 for descriptive statistics. The mean±SD age of the women was 30.9±3.6 years and the majority were married (90.9%) and employed (76.4%) with tertiary education (76.4%). The mean±SD EPDS was 8± 4.89 and 18% of participants scored 12 or higher. The mean±SD BSES was 139±12, with an item mean score of 3.25. The item that scored the lowest at 1.11 was worrying about the quality of breastmilk. We conclude that the women in our sample had a fairly high self-efficacy score (top 20%) and are motivated to exclusively breastfeed but need support in certain areas. Postnatal depression (PD) was not likely in most of the women, however, almost 1 in 5 women had a fairly high possibility of PD and need support and education. More research is needed in a larger sample that includes women from a wide range of locations and backgrounds to understand the barriers and enablers of EBF and inform the implementation of interventions for lactating women in SA.

POSTER #8

Age-Related Changes in Adipose Tissue Histology in Male C3H/HeJ Mice Fed a High-Fat Diet That Developed Hepatic Carcinoma

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Aging is a predominant risk factor for diseases, including obesity and cancer. Obesity is characterized by excessive white adipose tissue (WAT), an organ capable of remodeling to meet metabolic demand (i.e., increases in cell size (hypertrophy) or cell number (hyperplasia) to accommodate the positive energy balance). However, aging may reduce WAT remodeling capabilities due to increases in inflammation and fibrosis via a process known as inflammageing, or chronic low-grade inflammation. Moreover, lipid spillover from inefficient adipose tissue increases hepatic lipid accumulation and contributes to the development of hepatocellular carcinoma (HCC), the most common primary liver cancer. Thus, a complex relationship exists between aging, adipose tissue plasticity, obesity, and HCC development. Therefore, our research aims to uncover the histological changes in WAT in the presence of increasing age, diet-induced obesity, and liver cancer development. We hypothesize that adipocyte size and number will decrease, and macrophage infiltration will increase with age in the WAT of male mice with liver cancer independent of diet-induced obesity. To investigate this question, visceral WAT samples were collected from male mice that were fed high-fat (HF; 46% fat, 36% carbohydrate, 18% proteins) and control (11% fat, 71% carbohydrate, 18% proteins) diets and euthanized at ages 6 months, 12 months, and 13+ months (Texas Tech University IACUC protocol 19021-02). Tissue from the harvested WAT was routinely fixed and stained with hematoxylin and eosin (H&E) to observe changes in adipocyte size and number using AdipoGauge software. Our research is expected to have an important positive impact by identifying the combined effects of obesity and aging on hepatocarcinoma development.

POSTER #9

Impact of 10 Curcuma longa (Turmeric) Species on Caco-2 Cell Viability

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By 2030, 57.8% of the U.S. adult population is predicted to develop obesity. Obesity is characterized by chronic low-grade inflammation that is mediated by the dysfunctional gastrointestinal barrier that controls localization of bacterial metabolites, including lipopolysaccharide (LPS) that activates pro-inflammatory pathways. Given rising obesity rates, there is an urgent need to identify approaches to offset obesity-associated effects to intestinal health. Turmeric (Curcuma longa) is a rhizomatous plant with various molecular constituents, like curcumin, that have health benefits. However, varieties that possess little to no curcumin have reported anti-inflammatory properties, but are much less studied, highlighting the need for investigations on the function of these bioactive compounds. This study's objective is to conduct pre-screenings to assess their safety and efficacy in resolving obesity associated inflammation. To screen for anti-inflammatory potential, an intestinal epithelial cell model, Caco-2 cells, will be treated with a physiologically and clinically relevant concentration of 10 ng/mL LPS for 4 days to mimic an obesity-associated inflammatory environment followed by various concentrations of 10 different turmeric species (0 – 8 mg/mL) for 24 h. Cell viability will be assessed using a MTT assay in response to the various species and doses. Overall, our studies will elucidate the safety of 10 U.S.-grown turmeric species and aid in selection of dosages that will be safe for human consumption. Our research will have a positive impact by identifying the safety of various doses of turmeric which will support animal and clinical studies on their development as anti-inflammatory therapeutic agents in metabolic diseases.

POSTER #10

Food Insecurity Nutrition Education (FINE) Program Positively Influences Dietary Habits in College Students

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Approximately 30-59% of college students are food insecure, and most have had no nutrition education. With 45% of 18-34 y/o students having at least one chronic health condition in 2019, proper nutrition and health education is pivotal. This study examined the impact of a peer-led nutrition intervention (FINE) at promoting healthy lifestyles among college students. Over 60 students were recruited via TechAnnounce, and were randomly assigned to either the control or intervention group. After confirming eligibility, the control group (n=12) received general nutrition information biweekly via email, while the intervention group (n=11) engaged in 90-minute in-person weekly education sessions for 9 weeks. Education content included healthy diet (MyPlate and DGA), physical activity (PAGA), sleep (AASM), self-care (CDC), and financial coaching. Activities included healthy cooking, mindful eating, exercise, and personal budgeting. After the intervention, members of the intervention group (n=10) participated in a focus group discussion using semi-structured interview questions. The session was recorded and transcribed verbatim, with transcriptions being confirmed by all authors. Inductive thematic analysis was employed. Four themes (Opportunity to learn, Real-life application, Quality of peer educators, and Need for improvement) were identified. Desires to maintain body functionality, self-efficacy, and positive role models were identified as motivators of healthy lifestyles, while food insecurity, lack of time and motivation, unhealthy food environments, and negative peer influences were identified as barriers. This peer-led nutrition program showed promising influence on healthy dietary habits, but the impacts of peer dynamics and college campus food environments should be considered for future programs.

GRADUATE STUDENTS

POSTER #11

Protective Effects of Curcumin in Metabolic Dysfunction-associated Steatotic Liver Disease

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Objective: Metabolic dysfunction-associated steatotic liver disease (MASLD) is a chronic disorder characterized by liver inflammation, accumulation of lipids and oxidative stress, often linked to obesity and metabolic syndrome. Curcumin has shown the ability to reverse hepatic steatosis in animal models by reducing oxidative stress, inflammation, and lipid accumulation. The current study aims to determine the mechanisms by which curcumin reduces hepatic steatosis and inflammation in diet-induced obese mice.

Methods: Five-week-old male B6 mice were randomly divided into either a high-fat diet (HF, 45% kcal fat) or a high-fat diet supplemented with curcumin (HFC, 0.4% w/w curcumin) and fed these diets for 14 weeks. Body weight, food intake, insulin, and glucose tolerance test were measured during the study. At study termination, liver tissues were collected for RNA and protein isolation and analyses of gene and protein expression, respectively.

Results: The results showed that curcumin supplementation did not affect body weight or food intake, but improved glucose clearance. Curcumin reduced liver triglyceride levels and demonstrated trends towards reduced expression of inflammation and lipid metabolism genes, such as Interleukin-6, acetyl CoA carboxylase, and fatty acid synthase ($p>0.05$). Curcumin also significantly reduced toll-like receptor-4 expression ($p<0.05$). Transcriptome analysis revealed curcumin upregulated genes involved in fatty acid beta-oxidation and PPAR alpha pathways, while downregulating LPS/IL-1 mediated inhibition of RXR pathway. Conclusion: These findings suggest curcumin's therapeutic potential in reducing metabolic dysfunction and liver steatosis through modulation of specific metabolic pathways. Ongoing studies will further elucidate the effects of curcumin and its metabolites in liver cells.

POSTER #12

Assessing Primary Care Residents' Health Literacy About Hidradenitis Suppurativa

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Introduction/Objectives: Hidradenitis suppurativa (HS) is a chronic skin disease characterized by rupturing or coalescing subcutaneous nodules resulting in deep, painful dermal abscesses followed by fibrosis and pustular sinus tracts.1,2,5 HS is frequently observed in post-pubertal females with symptoms manifesting in intertriginous regions of the body. Genetic predisposition, smoking, obesity, and hormonal factors play etiological roles.1,2 HS adversely impacts quality of life, disincentivizing seeking treatment.1,2,6 Patients wait 7-10 years on average to receive a formal diagnosis of HS, with family medicine/general practice specialists accounting for 24% of initial diagnoses.1,2,4,5 Our project seeks to assess primary care residents' knowledge of and attitudes toward HS and test our hypothesis that residents will benefit in their care of patients from additional education and experiences pertinent to HS.3.

Methods: A 10-question omnibus-style survey regarding HS awareness and approaches to discussing HS was administered to 36 residents practicing in Family Medicine, Internal Medicine, OB/Gyn, Pediatrics, and other specialties in the Texas Tech University Health Sciences Center system. Responses were per Likert scale or numeric values.

Results/Conclusion: Two thirds of respondents practiced in family medicine, pediatrics, and general surgery. Less than a fourth were confidently familiar with HS. Less than a third were fully confident diagnosing HS without referral to a specialist. Nearly all agreed HS may be challenging to treat, as it is a sensitive topic for patients to initiate. Researchers will now identify which specialties demonstrated the lowest health literacy about HS and create an outreach program to assist residents with identifying, discussing, and treating HS.

POSTER #13

Exploring Metabolic Reprogramming of Non-obese Nepl15 Mutant Flies Through Metabolomics and Lipidomics

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The Neprilysin-like 15 (Nepl15) tissue-specific, catalytically dead, secreted protein acts as a major regulator in glycogen and glycerolipid storage in Drosophila. Despite consuming the relatively same amount of food, Nepl15 knock-out (Nepl15KO) males appeared to store significantly less lipids and glycogen, whereas the mutant females appeared to store only slightly less lipids and a larger amount of glycogen when compared to the control (w1118) flies. Thus, we found that the mutant flies reveal anti-obesity properties such as an extended life-span and constant activity at older ages. To investigate the nutrient metabolic pathways associated with these properties at the cellular level, we performed pathway analysis on the primary metabolomic and lipidomic data using age-matched mutant and control flies. The preliminary tests using the SIMCA software revealed that there were significant differences in the primary metabolites and lipids between the two in the mutant and control groups. A sex-specific difference was also observed in the Nepl15KO flies compared to their wild-type counterparts according to the Principal Component Analysis (PCA) model. Using MetaboAnalyst 6.0 and considering a 1.5 fold change in Nepl15KO relative to w1118 it was found that the mutants had a variety of upregulated and downregulated metabolites and lipids. Our pathway analysis was successfully able to identify 8 common pathway changes that were found in both mutant sexes, 10 unique pathway changes in our mutant males and 4 unique pathway changes in our mutant females in a variety of biosynthetic processes. Hence, our data demonstrates an ample change in the nutrient metabolic pathways between our mutant (Nepl15KO) and control (w1118) adult flies of each sex. Further analysis of our results will provide useful and comprehensive information of the metabolic pathways controlled by Nepl15 and may be useful in future endeavors relating to obesity and other metabolic disorders.

POSTER #14

Impact of Exercise Intensity on Short Chain Fatty Acids and Other Markers of Obesity-Associated Metabolic Dysfunction

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Objectives: About 40 percent of the world and US populations are now living with overweight. Given its rising prevalence, further research is necessary to develop effective therapies. While exercise is an effective approach, success depends on the prescribed plan and host factors including gut microbiota composition and metaboli tes, such as short chain fatty acids (SCFA). In this project, we assessed the effectiveness of high-intensity interval training (HIIT) on markers of metabolic dysfunction in obese subjects.

Methods: 20 participants were randomly assigned to either 4-weeks of HIIT or light intensity training (LIT) program. Anthropometric measures were recorded, and stool and blood samples were collected before and after the exercise intervention. SCFA concentration assessment was performed via Liquid chromatography mass spectrometry (LCMS).

Results: Mean BMI was 33. 64±1.55 kg/m2 in the HIIT group and 31.96±4.28 kg/m2 in the LIT group. SCFAs analysis in stool and serum showed a significant interaction for serum butyric acid (p=.02) and a significant time interaction for stool Acetic Acid in the HIIT group(p=.03). Analysis of the lipid panel showed a significant decrease in triglyceride concentration, regardless of exercise intensity (p=.04).

Significance: The findings highlight the critical role of exercise as a promising intervention to combat the global burden of obesity, evidenced by alterations in SCFAs, and a significant decrease in triglyceride levels.

Conclusions: Our data indicate that exercise improves lipid levels and alter SCFA profile in individuals classified as overweight. However, further research is needed and will be powered by ongoing data collection in this clinical trial.

POSTER #15

Dietary Pea Fiber Improved Energy Balance and Glycemic Control in Obese Male Rats

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Background: Dietary fibers from pectin, inulin and resistant starch have been extensively studied for protection against obesity and diabetes. However, the health benefits of fiber from peas are largely unexplored. We determined the dose-response effects of two novel types of pea hull fiber (PHF-125, PHF-200) of varying texture on energy balance, body composition, and glucose tolerance in diet-induced obese male Sprague Dawley rats.

Methods: In study-1, obese rats (n=52) fed high fat diets (40% fat kcal) were randomized for 1 week to either 0% (control), 5%, 10% or 25% PHF-125. In study-2, obese rats (n=56) were randomized to 0% (control), 5%, 10%, or 25% PHF-200. For both studies, food intake, energy expenditure, respiratory quotient, and body composition were recorded, and IP glucose tolerance tests were performed.

Results: In study-1 compared to control, 25% PHF-125 transiently reduced caloric intake on day 1, and improved blood glucose clearance. Body weight and composition did not differ among groups. In study-2, compared to control, 25% PHF-200 reduced caloric intake for 2 days, and improved blood glucose clearance. Body weight did not differ but, fat gain was dose-dependently reduced by 41% in 5% PHF-200, 53% in 10% PHF-200, and 108% in 25% PHF-200. Energy expenditure did not differ, but respiratory quotient was dose-dependently decreased for 7 hrs in 5 % PHF-200, 14 hrs in 10% PHF-200, and 22 hrs in 25% PHF-200 during days 1-7.

Conclusion: Dietary pea fiber dose-dependently decreased caloric intake and fat gain, shifted substrate utilization towards lipids, and improved glycemic control.

POSTER #16

The Molecularity of Smell, Taste Driven by Vision, and Experiential Learning

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ABSTRACT OBJECTIVE We developed a novel computational approach to identify the molecularity that drives smell and taste and how these chemical senses are associated with the visual senses and experiential learning. Our approach explores electronic-structural features in molecules that invoke the visual perception of brown following smell and taste tests.

METHODS We studied electronic structural features for 19 odorant molecules and 18 tastant molecules linked to the perception of “Brown.” We identified the structural electronic features in these smell and taste molecules by studying interatomic distances (bonded and non-bonded), interatomic angles and dihedral angles and NMR chemical shifts for relevant atoms. We classified these molecules into cooked, vegetable, and sweet tastes and smells. We developed customized software to identify atom pairs, atom triads and atom tetrads that are reproducible across molecules that have the same smell and tastes.

RESULTS We discovered significant reproducible electronic structural features across molecules which are responsible for similar smells and tastes, while comparisons with molecules that elicited different smells and tastes were used as controls. This informs us that chemical markers can be responsible for a compound’s smell and taste

SIGNIFICANCE Our work identifies specific molecular features that contribute to smell and taste. This is very impactful in obesity research and also the development of odors and flavors as additives in food.

CONCLUSION We identify chemical markers that contribute to smells and tastes and combine these chemical senses with the visual perception as well as experiential, social and geographical background.

POSTER #17

BCAAs Acutely Increase Sucrose Indulgence in Mice: Possible Role of FGF21?

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Overconsumption of palatable food is a major contributor to the recent spike in obesity prevalence. Circulating levels of branched-chain amino acids (BCAAs) are observed in both human and animal models of obesity and type 2 diabetes. Low protein and/or BCAA-restricted diets have shown to induce the expression of a hepatokine called fibroblast growth factor (FGF21), which negatively regulates simple sugar intake and sweet preference in mice. Whether or not BCAAs can alter reward functions to increase preference for palatable foods and the role of FGF21 in this process have not been explored. 8-week-old male C57Bl/6 mice were assigned to two weight-matched groups to receive intraperitoneal injections of either saline or BCAAs (225 mM) twice a day for 7 consecutive days. Before and after intervention, their 10% sucrose intake was measured for two days. Daily body weight and food intake were measured throughout the study. Plasma BCAA levels tended to be higher in the BCAA group compared to saline group as expected. While sucrose intake was identical between groups at baseline, BCAA treatment increased sucrose intake that was independent of body weight, food intake, or blood glucose. This was associated with lower plasma FGF21 in BCAA group compared to saline group. Our findings suggest that a short-term supplementation of BCAAs may promote indulgence in palatable sucrose solution, and this may be potentially related to the reduction in plasma FGF21 levels. Determining the long-term effects of BCAAs on sucrose preference and FGF21 as a possible mediator is warranted.

POSTER #18

Exploring Social Media Engagement on Iron Deficiency Anemia: Insights from Individual Experiences.

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Social media, a vital platform for health-related conversations in the digital era, sheds light on conditions such as iron deficiency anemia, a disorder occurring when there is insufficient iron available for hemoglobin formation (Cleveland Clinic, 2022). Despite extensive clinical research, there remains a substantial knowledge gap about the mechanisms via which individuals communicate their experiences on social media platforms. This study investigates the dissemination of information on iron deficiency anemia through platforms like YouTube and examines user engagement with this content. While the current body of literature mostly examines the clinical elements, this study acknowledges the necessity of exploring the influence of social media on health-related conversations. The research seeks to offer insights into worldwide viewpoints on iron deficiency anemia, offering significant knowledge to the developing field of health communication. The data were grouped according to recurring themes. The study is qualitative in nature and made use of content analysis, which was carried out with 100 comments from three YouTube channels. The findings indicated the experiences people were having with iron deficiency anemia and how people also lacked knowledge about iron deficiency anemia and the symptoms associated with it. These show how online networks support health literacy by offering insightful information and creating a feeling of connection among people facing comparable medical conditions. The planned publication channel for this research is the Journal of Health Communication.

POSTER #19

Investigating Molecular Mechanisms for Spontaneous High Grade Serous Carcinoma in a Mouse Model for Obesity
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Despite modern advancements in cancer treatments, high grade serous ovarian carcinoma (HGSC) remains the deadliest gynecological cancer. Currently, the molecular pathway that leads to the formation and progression of HGSC is not well known, nor is the effect of obesity on its development clear. The current paradigm for ovarian cancer development involves tumor cell transfer from the fallopian tube to the ovary. We capitalized on a long-term dietary study by our group exploring the relationship between obesity, dietary intervention and spontaneous cancer incidence in C3H/HeJ mice. Over the course of the 18-month study, 22 of 200 female mice were found to have ovarian tumors and concurrent oviduct anomalies, and there were 9 additional oviduct anomalies. Using this resource, the aim of my study is to examine the role of oviducts in the development of ovarian cancer. Based on previous studies, PTEN is commonly found to be inactivated in HGSC, resulting in uncontrolled growth of tumor cells through the AKT pathway. We hypothesize that PTEN inactivation will also be mirrored in the oviducts suggesting a relationship to ovarian cancer development. To test this hypothesis, histological comparison of tissue morphology was conducted, followed by immunohistochemistry analysis of PTEN and phosphorylated AKT. After this, we confirmed the results by immunoblot analysis.

POSTER #20

Importance of Nutrition and Exercise in Medical Student Wellness
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Mental health and wellness are crucial components of medical training. With social isolation, long hours, and academic pressure, medical students experience psychiatric morbidity, anxiety, burnout, and substance abuse, and these outcomes negatively impact wellness. Studies have shown that poor mental health during medical training is predictive of poor mental health as physicians. This project aims to elucidate the factors that aid in wellness during medical school, which would improve physician wellness and lead to positive patient outcomes. Data collected from the TTUHSC School of Medicine P3-1 Honors Project Omnibus Survey, which included time spent conducting research, sleeping, with family and friends, doing extracurricular activities, and consuming alcohol and caffeine, failed to find protective factors in activities performed in the year prior to medical school matriculation that correlated with wellness in medical school. Medical student wellness is better predicted by current factors. Wellness is most affected by self-perceived eating habits, next by physical fitness, and third by academic performance. Interventions in exercise and nutrition would likely have a beneficial impact on medical student wellness and mental health.

POSTER #21

Circulating Branched Chain Amino Acids (BCAAs) are Associated with Cognitive Decline in Alzheimer's Disease

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Alzheimer's disease (AD) is an age-associated irreversible neurodegenerative disorder. Type 2 diabetes (T2D) is a strong risk factor for AD sharing common pathophysiological features including amyloid and/or Tau deposits in the brain and metabolic perturbation which is interstingly shown to preceed AD symptoms. Emerging evidence suggests that circulating branched-chain amino acids (BCAAs) are associated with T2D. While excess BCAAs are shown to be harmful to neurons, whether aging affects BCAA metabolism that can further exacerbate the pathology of AD is poorly understood. Hence, we hypothesized that high circulating BCAAs are associated with metabolic dysregulation as well as AD progression. To test this, we conducted behavioral tests, glucose tolerance test (GTT), insulin tolerance test (ITT), BCAA assay and Western blot (WB) in 8 and 12-month-old male wild-type (WT) and transgenic APP/PS1 mouse model of AD. The 12 month APP/PS1 mice displayed significant impaired glucose tolerance, insulin sensitivity, and elevated plasma BCAAs & cognitive decline compared to the WTs. Interestingly, plasma BCAAs and impaired glycemic control were also strongly correlated with cognitive decline in 12 month APP/PS1 mice. But protein analysis in the liver showed no significant difference in BCAA catabolism of WT and AD mice of both 8 and 12 month group. Collectively, this study reveals a positive association of circulating BCAAs, metabolic perturbation and cognitive decline in AD along with aging. Further investigation in different developmental stages of the disease, different tissue and female mice may help to asses the potential of BCAAs as a predictive or diagnostic biomarker of AD.

POSTER #22

Role of Artificial Intelligence to Solve Obesity: A News Framing Analysis

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Obesity presents a significant global health challenge, demanding innovative solutions to curb its escalating prevalence. Artificial intelligence (AI) holds promise for combating obesity through tailored interventions, yet media narratives surrounding its role remain underexplored. This research investigates the portrayal of AI in addressing obesity through a news framing analysis within the top five popular US newspapers' articles published between 2019 to 2023. Guided by framing theory, this study identifies prevalent frames within news articles, exploring how AI's involvement in obesity intervention is depicted. The analysis scrutinizes framing elements such as emphasis, tone, sources, and underlying assumptions, providing insights into dominant narratives and their implications. Examining differences across newspapers and article types aims to discern editorial perspectives and audience preferences regarding AI's role in addressing obesity. The research questions delve into the portrayal of AI's benefits, concerns about privacy and misinformation, and skepticism regarding effectiveness. Articles discuss AI's potential to develop drugs for treating obesity thoroughly, function as a lifestyle tracker, recommend medication, physical activity, or diet plans, and generate global obesity tracker maps. Contrastingly, only a few articles highlight growing worries about AI-related data bias and ethical concerns. Findings elucidate societal perceptions and expectations surrounding AI's contributions to combating obesity, informing public discourse, policy decisions, and future research directions. This study advances understanding of how media representations influence the adoption and implementation of AI in public health initiatives, particularly within the context of obesity, contributing to efforts to harness AI effectively to address the obesity epidemic and promote population health.

POSTER #23

Examining Policy Coherence and Coordination as an Enabler of Multisectoral Nutrition Programming in Kenya
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Background: Effective multisectoral nutrition actions are critical in addressing the burden of undernutrition, overweight, and obesity. The study aimed to assess the status of nutrition policy coherence and coordination and contributing factors across line ministries implementing nutrition programs in Kenya.

Methods: The study used a cross-sectional exploratory design. The study targeted 94 government and non-governmental staff, working as program managers and officers across relevant line ministries. Likert scale questions were used to assess the target group's perception across nine areas related to the topic. SPSS version 29 was used to analyze the data. Descriptive statistics was used to evaluate the status of policy coherence and coordination.

Results: Preliminary findings indicate an overall policy coherence and coordination level of 64%. Factors that contribute to the current status include increased interest from other ministries to collaborate on nutrition-related matters (92%) and enhanced alignment and integration of sector long-term plans to national nutrition policies and plans (82%). Areas that require improvement encompass clarity in roles and expectations on collaboration and coordination (42%), the inclusion of nutrition in annual plans and budgets especially in non-traditional ministries (45%), and fostering information sharing on nutrition across ministries (56%).

Conclusion: While progress has been made in nutrition policy and coherence and coordination, there is a need for improvements in enhancing clarity in roles and expectations for intersectoral collaboration, mainstreaming nutrition into annual plans and budgets and promoting information exchange on nutrition. Further research is needed to assess factors that significantly influence multisectoral nutrition policy coherence and coordination.

POSTER #24

Advancements in Predicting Diabetes Biomarkers: A Machine Learning Epigenetic Approach.
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Background: The urgent need to identify new pharmacological targets for diabetes treatment and prevention has been amplified by the disease's extensive impact on individuals and healthcare systems. A deeper insight into the biological underpinnings of diabetes is crucial for the creation of therapeutic strategies aimed at these biological processes. Current predictive models based on genetic variations fall short in accurately forecasting diabetes.

Objectives: Our study aims to pinpoint key epigenetic factors that predispose individuals to diabetes. These factors will inform the development of an advanced predictive model that estimates diabetes risk from genetic profiles, utilizing state-of-the-art statistical and data mining methods.

Methodology: We have implemented a recursive feature elimination with cross-validation using the support vector machine (SVM) approach for refined feature selection. Building on this, we developed six machine learning models, including logistic regression, k-Nearest Neighbors (k-NN), Naive Bayes, Random Forest, Gradient Boosting, and Multilayer Perceptron Neural Network, to evaluate their performance.

Findings: The Gradient Boosting Classifier excelled, achieving a median recall of 92.17%, and outstanding metrics such as area under the receiver operating characteristics curve (AUC) with a median of 68%, alongside median accuracy and precision scores of 76%. Through our machine learning analysis, we identified 31 genes significantly associated with diabetes traits, highlighting their potential as biomarkers and targets for diabetes management strategies.

POSTER #25

Effects of Diets Containing Ammoniated Beef on Markers of Ammonia Metabolism in Livers from Diet-Induced Obese Mice

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Objectives: Diets high in fat and sodium, while low in fruits and vegetables tend to have an acidic pH, which may contribute to metabolic dysregulations including acidosis. We have previously reported physiological improvements from pH-enhanced beef with ammonium hydroxide, yet mechanisms remain unknown. Therefore, we hypothesized that changes in hepatic ammonia metabolism mediate metabolic ameliorations in obese mice consuming diets containing ammoniated beef, compared to non-ammoniated beef.

Methods: Male and female B6 mice were fed 4 diets for 12 weeks: Low Fat Beef, High Fat Beef, without (LFB or HFB, respectively) or with ammoniation (LFBN and HFBN). Mice were metabolically phenotyped during interventions. Tissues were collected following intervention and stored for further analyses. Using qPCR, expression of genes involved in ammonia metabolism were determined in the liver. Results: Histological analysis of male liver triglyceride content revealed HF diets increased liver TG accumulation [P<0.0001]. In female livers, HF decreased mRNA levels of Ass1 [P=0.0005] and Ornt1 [P=0.0049]; while in males only Ornt1 mRNA levels were decreased by HF [P=0.0043]. Moreover, ammoniation led to trends of increased mRNA expression of Asl [P=0.0544] and Ass1 [P=0.0716] and Ca5a [P=0.0022] in females. By contrast, limited changes were observed in male liver.

Conclusions: Our results indicate that ammoniation and fat content sex-dependently regulate hepatic ammonia metabolism at the mRNA levels. Experiments are ongoing to measure changes in protein expression, and in ammonia metabolizing tissues like the kidneys. This research will help enhance our understanding of impacts from dietary pH, fat content, and sex in metabolic diseases, and warrants further translational research.

POSTER #26

Transcriptomic Analyses of Eicosapentaenoic Acid Effects in Adipose Tissue and Cortex from High Fat Diet-Induced Obese Amyloidogenic Alzheimer Disease mice

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Objective: Obesity, marked by excessive and inflamed white adipose tissue (WAT), increase the risk of Alzheimer's disease (AD), which is specified by amyloid-beta (Aβ) plaques. We reported that eicosapentaenoic acid (EPA) reduced serum Aβ40 in diet-induced obese transgenic (TG) AD mice. Here, we studied the links among obesity, WAT inflammation and neuroinflammation in this AD model. Methods: Male and female APPswePS1E9 TG and non-TG wild-type (WT) littermates were fed HF, or HF diets with 36g EPA/kg (HF-EPA). After 32 weeks, blood, WAT and brain were collected for further analysis, including fatty acid profiling and gene expression. Data were analyzed by three-way ANOVA. Results: EPA groups had higher EPA in red blood cells than HF groups ($p < 0.001$). Compared to HF group, EPA reduced NLRP3 gene expression in TG male and female cortex ($p = 0.0205$ and <0.0001) and in WAT of TG females ($p = 0.02$). RNA-Seq analyses showed that EPA inhibited oxidative stress (p □0.05) and TNF-□ pathways (p □0.05) compared to HF in TG and WT females' cortex, respectively. Similar analyses in WAT showed that EPA inhibited melatonin degradation 1 (-log $p = 5.66$) and netrin1 (-log $p = 3.84$) pathways in TG males and females, respectively, compared to HF. Moreover, EPA inhibited leukocyte extravasation pathways ($z = -2.64$, -log $p = 1.56$) in WT males, compared to HF.

Conclusion: EPA protective effects in obese AD mice partly mediated by inhibition of inflammation. Further analyses are required to identify pathways influencing the links between obesity-induced neuroinflammation in AD. Funded by the NIH National Center for Complementary and Integrated Health (NCCIH) and a Supplement from the National Institute on Aging (R15 AT008879-01A1S1)

POSTER #27

High fat diet aggravates metabolic dysfunctions in DNAJB3-deficient female mice

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Obesity and its related metabolic dysfunctions are partly mediated by chronic low-grade inflammation and altered expression of numerous proteins, including stress-responsive heat shock proteins (HSPs). Specifically, Heat Shock Protein-40, subfamily B, member 3 (DNAJB3), functions as a chaperone protein involved in restoring protein homeostasis. Patients with obesity and type 2 diabetes (T2D) exhibit low levels of DNAJB3, with some restoration observed with physical activity. In this study, we hypothesized that the absence of DNAJB3 would exacerbate obesity-related metabolic dysfunctions in mice. DNAJB3 knockout (KO) mice were generated using the CRISPR/Cas9 approach and compared to B6 wild type (WT) littermates. Male and female KO and WT mice were subjected to high fat (HF: 45 kcal% fat) or low fat (LF: 10 kcal% fat) diets for 12 weeks. Weekly measurements of body weight and food intake were recorded, alongside body composition and glucose tolerance tests. Upon euthanasia, blood and tissues were harvested for analysis. Compared to WT, KO mice fed HF diets demonstrated higher body weight and fat mass and a slower glucose clearance rate. Additionally, mRNA levels of the inflammatory gene, interleukin 6 (IL-6), were upregulated in adipose tissues of HF KO, HF WT and LF KO mice, compared to LF WT mice (P=0.032, P=0.14, P= 0.047, respectively). Moreover, mRNA levels of the glucose transporter 4 (Glut 4) gene were significantly higher in LF WT, compared to HF KO mice (P=0.013); and both HF WT and LF KO had higher levels of Glut 4 compared to LF WF group (P=0.13, P=0.22, respectively). The HF group exhibited higher serum leptin, IL-6 and Insulin levels compared to the other groups ($p < 0.0001$). Additionally, we tested mRNA levels of insulin signaling markers, Insulin1 (Ins1), Insulin2 (Ins2), and Glucagon (Gcg) in pancreas tissue. The results suggest significant fold change in transcripts of Ins1, Ins2 and Gcg in mice fed with HFD conditions in female groups. These findings highlight the importance of investigating sex differences in DNAJB3 metabolic functions and its potential as a therapeutic target for addressing obesity and T2D. Further research in this area is warranted to elucidate the underlying mechanisms and develop targeted interventions.

POSTER #28

High-Fat Diet Induces the Expression of Maged1 and Maged2 in Mouse Liver Tumors

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Background: Hepatocellular carcinoma (HCC) is the fifth most common cause of cancer worldwide, and Texas has the highest HCC incidence and mortality rates in the USA. Obesity is one of the major risk factors for HCC. Many melanoma antigens (MAGEs) are dysregulated in HCC, but the molecular mechanisms underlying the aberrant expression of MAGEs in HCC are unknown. We hypothesize that obesity contributes to the aberrant expression of MAGEs in HCC. Methods: We analyzed the expression of Mage genes in liver tissues from 81 C3H/HeJ mice exposed to 6 different western-style diets. After 18 months, we isolated RNA from the cancerous and healthy liver tissues to measure Mage gene expression by reverse transcription-quantitative polymerase change reaction (RT-qPCR), and differential gene expression was calculated using Student's t-test or One-Way ANOVA.

Results: Our results showed that although type I Mages (families a, b, and c) are often aberrantly activated in various cancers, we did not observe increased expression of these Mages in mouse liver tumors, suggesting that type I Mages are not involved in HCC progression in mice. However, the more ubiquitously expressed (type II) Maged1 and Maged2, were upregulated in mice liver tumors.

Conclusions: This research provides the first insight into the impacts of obesity on the expression of Mages in mouse liver tumors. Our results indicate that MAGED1 and MAGED2 might play a role in liver cancer progression and mice may be a valuable model for unraveling the molecular mechanisms and potential diagnostic and prognostic options of these genes.

POSTER #29

Maternal Dietary Butyrate Protects Against Adverse Metabolic Effects in Low Birth Weight Offspring
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Background: Suboptimal intrauterine environment results in low birth weight (LBW) infants who are predisposed to metabolic diseases later in life. Aims: To develop an LBW model in Sprague Dawley (SD) rats with dietary protein restriction and determine whether dietary branched chain amino-acids (BCAA) and butyrate can reverse the adverse effects of LBW.

Methods: Study-1: Diet-induced obese female SD rats were randomized to four diet groups- control high-fat (20% protein, 40% fat kcal; HF), low-protein (5% protein; LP), LP+BCAA (100% requirements), or LP+2BCAA (200% requirements) during pregnancy and lactation, with HF postweaning for 8-weeks. Body weight, IP glucose and insulin tolerance tests in mothers, and weight and craniofacial measurements of pups were recorded. Study-2: Diets were control, LP, and LP+10% butyrate (SB). Body weight and composition were recorded weekly, and IP glucose tolerance test of pups at 8-weeks.

Results: Study-1: Birth weight of LP, BCAA, and 2BCAA pups were decreased by 21%, 62% and 37% than HF. At 8-weeks, lengths and width of the skull, face and neurocranium were decreased by 8-13% in LP, and 12-24% in BCAA than HF. BCAA and 2BCAA mothers had improved insulin sensitivity than HF, but 2BCAA mothers cannibalised their pups. Study-2: Birth weight of LP and SB pups were 11% and 39% lower than HF. Notably, LP pups had 41% greater body fat% and higher blood glucose than HF; SB did not differ from HF.

Conclusion: Maternal dietary BCAA was ineffective but butyrate protected against obesity and glucose intolerance in low birth weight offspring.

POSTER #30

Sertoli Cell Regulation of the Complement System and its Potential Applications in Diabetes Mellitus
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Diabetes Mellitus (DM) is a chronic metabolic disease characterized by impaired production of insulin (Type 1 DM) or insulin resistance (Type 2 DM). The resulting hyperglycemia promotes a pro-inflammatory environment associated with increased complement circulation. The complement system is part of the innate immune system; it functions to protect the body from foreign pathogens by activating inflammatory processes, opsonizing pathogens, and lysing target cells. Dysregulation of the complement system due to DM, leads to complement-mediated chronic inflammation and DM microvasculature complications, such as vascular endothelium damage. Interestingly, Sertoli cells (SCs) have been shown to evade destruction via complement. Therefore, the goal of this study is to determine the mechanism(s) by which SCs regulate complement and create an immune-protective environment. Using an in vitro model of complement activation, we confirmed the survival of neonatal pig SCs (NPSCs) and killing of pig aortic endothelial cells (PAECs) after 1.5 and 15 hours of exposure to normal human serum (NHS, containing antibodies and complement). Additionally, we found that NPSCs express twenty-one complement regulatory genes, nineteen of these genes were upregulated in NPSCs when compared to the gene expression by PAECs. We also found PAEC had increased survival after a 1.5-hour incubation with NHS when cultured in SC conditioned media (SCCM) compared to PAEC cultured without SCCM. Moreover, NPSCs have significantly elevated expression of seven secreted complement inhibitors compared to PAECs. Determining the mechanism(s) by which SCs regulate the complement system can potentially minimize the complications associated with the pro-inflammatory environment caused by DM.

POSTER #31

Effects of Supplemental Tart Cherry and Fish Oil on Inflammation and Gut Microbiota in Diet-induced (B6) and Genetically (TALLYHO/Jng) Obese Mice Models

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Objectives: In obesity, excessive fat accumulation leads to adipose tissue dysfunction and initiates chronic inflammation. Gut dysbiosis in obesity is also associated with an increased abundance of lipopolysaccharide-producing bacteria that contribute to inflammation. Fish oil (FO) and tart cherry (TC) are rich sources of omega-3 polyunsaturated fatty acids and anthocyanins, which modulate gut microbiota and reduce inflammation. Thus, we hypothesized that compared to individual supplementation with FO and TC, the combination of them will have greater effects in modulating gut microbiota and ameliorating obesity and inflammation.

Methods: Four-week-old male and female B6 and TALLYHO/Jng (TH) mice were fed for 14 weeks a high fat (HF), HF supplemented with TC, FO, or TC+ FO. During the intervention, body weights were recorded and blood and cecal samples were collected at the study termination. Plasma interleukin 6 (IL-6) was measured by ELISA, and cecal DNA was isolated for 16S rRNA Seq to determine gut microbiota composition.

Results: No differences were observed in body weight across treatments, regardless of sex or genotype. In B6 and TH females, all supplements reduced plasma IL-6, compared to HF diet ($P<0.05$). TH mice on TC or TC+FO showed more abundance of Lachnospiraceae and less Helicobacteriaceae compared to the HF. Similar trends were observed in B6 mice. Also, in B6 female mice, alpha diversity was significantly increased by FO or TC+FO compared to HF ($p <0.05$).

Conclusions: These findings suggest that changes in gut microbiota may contribute to the anti-inflammatory effects of TC, FO, or their combination, especially in female mice.

POSTER #32

The Role of Artificial Intelligence in Nutritional Dietary Assessment: An Article Review

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Artificial intelligence (AI) has different definitions, equal to those subfields within AI itself. In simple terms, AI refers to computer systems doing tasks that usually need human intelligence. AI is constantly changing and is revolutionizing the field of healthcare and nutrition, especially clinical nutrition. Thus, the purpose of this review was to investigate AI's role in nutrition research in dietary assessment (DA). Eight electronic databases were searched: PubMed, Web of Science, EBSCO, Agricola, Scopus, IEEE Explore, Google Scholar, and Cochrane. Articles underwent three screening phases: duplicate elimination, title-abstract review, and full-text review. PRISMA guidelines were followed for articles selection from 2000-2023. A total of 1737 articles were retrieved, and 22 were included for analysis. Mostly, this articles' focus is on AI's ability to operate as a nutritionist. Some constraints on data collection in DA are accuracy and time. AI can evaluate diets, while removing biases and the burden of self-reported data. However, AI in nutrition remains uncommon, is in early development stages and still limited in food recognition and food estimation. Ethics is a concern about AI's use. Interestingly, this issue is not being entirely addressed and remains unsolved. AI in the nutrition field is gaining more importance and needs more research. Health improvement using AI, validation, accuracy and patients' satisfaction using AI are to be determined. Therefore, clinical research is needed to determine AI's efficacy in DA. Also, ethical guidelines need to be addressed to avoid collateral damage to certain populations, resulting from AI being trained by humans.

POSTER #33

Exploring the Molecularity of Spices: The Olfactory Perspective
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We have explored molecules that produce smell responses related to spices to identify aspects of these molecules that might be responsible for this smell. Our work informs us that the spice-related odors that these molecules produce go beyond superficial molecular features such as aliphatic or aromatic systems, specific functional groups, or straight chain or ring systems. The aspects we have explored here are atom pairs in structurally and constitutionally disparate molecules that produce the same smell. These atom pairs are not necessarily bonded. The atom pairs have reproducible electronic-structural features even when they are in molecules that at a superficial level do not appear to have similar gross features. For the electronic features to be reproducible they should have a nuclear magnetic resonance (NMR) chemical shift for the atoms in the atom pair to be within 10 ppm (parts per million). For the structural features to be reproducible the interatomic distance should be within 0.2 Å. We explored these atom pairs for 37 molecules whose odors were identified by smell experts from the GoodScentsCompany web resource. We have identified atom pairs that are likely responsible for specific spice-related odors. These include combinations of smells that result in the unique bouquet associated with a spice. For molecules clustered by similar odors our results are consistent and independent of the overall nature of the molecule.

POSTER #34

Changes in Medical Student Nutritional Patterns
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Pre-clinical medical students represent a unique population battling a demanding schedule, significant emotional and financial burdens, and decreased physical activity. All of these factors have the ability to hinder healthy dietary habits. Our study assessed possible dietary changes medical students experienced when beginning their pre-clinical years. We hypothesized that there would be a negative change in pre-clinical medical students' dietary habits after they started medical school. Data was collected through an online survey sent to all TTUHSC School of Medicine medical students. Our questions included five statements with a 1-5 strongly disagree to strongly agree scale assessing eating habits before and since starting medical school. Five multiple-choice questions were also asked to assess food spending and cost, eating behaviors, and barriers to food access. Upon starting medical school, there was a statistically significant decrease in participants who reported regularly eating three meals, eating between major meals, and eating balanced meals. Participants also indicated that time was a significant barrier to maintaining healthy dietary habits, along with cost. Further, most students indicated utilizing school resources to support healthy dietary habits. Despite showing decreases in healthy eating habits, most respondents indicated that they did not believe their diet negatively changed after starting medical school. Thus, future steps include further education on implementable healthy dietary habits and increased access to school food resources to improve dietary habits in pre-clinical medical students.

POSTDOCTORAL FELLOWS

POSTER #35

Exploring the Mysterious Roles of Nuclear DVL1 in Triple Negative Breast Cancer
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Dishevelled 1 (DVL1) protein is most well-known for its cytoplasmic role that regulates Wnt/□-catenin signaling, a pathway that is an important regulator of various developmental processes, tumor growth, and antitumor immunity. Very recently, we reported that DVL1 is enriched in triple negative breast cancer (TNBC), promotes tumor growth, and localizes to the nucleus. Although DVL is critical for Wnt signaling, surprisingly little is known about how it is regulated and the significance of its nuclear translocation. Analysis of our DVL1 chromatin immunoprecipitation-sequencing (ChIP-Seq) dataset in a TNBC model revealed DVL1 enrichment at important immune genes including two major histocompatibility complex class II genes (HLA-DPA1 and HLA-DRA) involved in antigen presentation. Expression of HLA-DPA1 and HLA-DRA has been shown to predict improved prognosis in breast cancer. Our assays using DVL1 loss and gain of function TNBC cells revealed differences in HLA-DPA1 and HLA-DRA expression (MHC-II). Furthermore, we identified TFAP2A and FOXC1 as nuclear binding factors of DVL1, based on in silico screens and in vitro co-immunoprecipitation assays validating binding with DVL1 in the nucleus. Collectively, we propose a preliminary model by which DVL1 regulates MHC gene expression in TNBC cells and interacts with TFAP2A and FOXC1 in the nucleus. Future studies will examine whether and how TFAP2A and FOXC1 mediate DVL1-directed regulation of MHC gene expression in TNBC. We anticipate the findings from this study to reveal the mysterious nuclear roles of DVL1 and strengthen our understanding of DVL1 as a potential therapeutic target in TNBC to improve women's health.

POSTER #36

Anti-inflammatory Effects of Sorghum Varieties: A Food-based Approach to Address Metabolic Diseases.
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Objective: Sorghum (Sorghum bicolor) stands as a cornerstone in global sustainable agriculture. Sorghum grains, particularly those with dark colors, contain significant antioxidants and essential nutrients. Additionally, sorghum is gluten-free and a non-GMO crop. However, systematic studies comparing metabolite differences across sorghum varieties or their corresponding health effects are lacking. Given the global epidemic of obesity, a complex disease characterized by chronic low-grade inflammation, our goal was to determine whether bioactives from sorghum varieties exert anti-inflammatory effects in adipocytes.

Methods: Our study focused on six diverse genotypes sourced from the Sorghum Association Panel (SAP), including white, yellow, dark red (Sumac), light violet, dark orange, and dark brown grains. We utilized ultra-performance liquid chromatography–mass spectrometry (UPLC-MS or UHPLC-MS) to explore the diverse array of phytochemicals present in sorghum grains. For in vitro studies, we used different doses of sorghum extracts to treat 3T3-L1 preadipocytes and applied the MTT assay to determine changes in cell viability. Moreover, we treated the cells with Lipopolysaccharide (LPS) to induce inflammation and determined whether sorghum extracts prevent LPS-induced IL6 secretion. Data was analyzed using GraphPad Prism10.2.1.

Results: Metabolite profiling revealed a rich spectrum of chemical compositions, such as vitamins, flavonoids, and polyphenols, among the diverse sorghum grains. Our preliminary data revealed that both polar and non-polar extracts were not toxic to 3T3- L1 cells. Moreover, several of these extracts significantly reduced LPS-induced IL-6 secretion from preadipocytes.

Significance and conclusions: Nutrient-rich sorghum-mediated anti-inflammatory benefits may play important roles in metabolic health, which merits further investigations in animal models and humans.

Funding organizations: United Sorghum Checkoff

MEDICAL STUDENTS/RESIDENTS

POSTER #37

The Effect of Education on Sleep and Exercise Habits on TTU Undergraduate Students

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Objective: Half of young adults do not meet the CDC-recommended guidelines for physical activity, with the greatest decline during the transition to college. However, students majoring in Kinesiology (KINE) learn key components of health maintenance and national guidelines for exercise and sleep. We aimed to characterize the influence of health education on students' exercise and sleep habits.

Methods: The TTUHSC School of Medicine P3-1 Honors Project Omnibus Survey, an anonymous online survey instrument, was sent to undergraduate students in TTU KINE. Students (N=33) answered eleven questions regarding KINE education, physical activity and sleep behaviors. Responses were coded as indicator variables. A linear regression was run for dependent variables (days of exercise per week, estimated steps per day, exercise intensity, exercise duration, and hours of sleep per night). Independent variables included years of KINE courses and whether students had taken formal courses on exercise or sleep recommendations.

Results: Only two relationships were significant. Number of days exercising per week (coefficient = -1.0, $p = 0.011$) and estimated steps per day (coefficient = -0.67, $p = 0.041$) were negatively correlated with years KINE coursework.

Significance: These data suggest that students with more KINE courses exercise fewer days and take fewer steps per week. Furthermore, education on sleep and exercise had little association with student behavior in other lifestyle behaviors, such as amount of sleep and exercise duration.

Conclusion: Our proposed intervention is to provide students with a resource that outlines health maintenance guidelines and recommends simple lifestyle changes.

POSTER #38

Perceptions of Medical and Pharmacy Students in the Usage of Complementary and Alternative Medicine (CAM) in Treating Type II Diabetes Mellitus: Implications for Future Clinical Practice

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Complementary and Alternative Medicine (CAM) encompasses a diverse range of medical systems, methods, and practices, which are increasingly sought out for their potential to complement conventional treatments and promote holistic well-being. The current research study aims to evaluate the knowledge, attitudes, personal usage, and potential integration of select CAM modalities, specifically dietary supplements, mind-body therapies, acupuncture, chiropractic, and homeopathy, in the management of type 2 diabetes mellitus among second-year medical and pharmacy students at Texas Tech University Health Sciences Center. The goal of this study is to understand how these future healthcare professionals might integrate CAM into their clinical practice to address type 2 diabetes in patients.

Methods: Adopting a cross-sectional observational study design, this project utilized the P3-1 Honors Project Omnibus Survey, an online survey instrument sent to second year TTUHSC medical students and pharmacy students. Of the received 71 responses, 63 were from medical students and 8 were from pharmacy students.

Results: While the survey data has been fully collected, it is still being analyzed. Data analysis will involve descriptive and inferential statistics for quantitative data, processed using statistical software.

Conclusion: Since the data for this project is still being analyzed, the results and conclusion for this project will be complete before the ORI's 9th Annual Meeting.

POSTER #39

Residents' Knowledge of Food Banks and Available Resources in and Around Lubbock County

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Food insecurity (FI) is associated with negative patient outcomes, increased social needs and medical care insecurity, and elevated healthcare utilization and costs, but often goes underdocumented in medical records. Despite the known benefits of screening for FI, healthcare providers frequently underestimate its prevalence due to barriers such as a lack of community food resources and validated screening tools. Given the above-average FI rate in Lubbock County (14.3%), we elected to survey local resident physicians' knowledge of community food resources. We predicted that residents lack knowledge regarding these resources and are thus unable to provide actionable advice to patients. Resident physicians across several specialties in the UMC Health System were surveyed via an Omnibus survey disseminated via email. Our results indicate that knowledge of FI resources is inconsistent across residents and may be lacking in medical education settings. Only one-third of residents felt familiar with how to access food banks in the community. An even smaller proportion were familiar with policies regarding demographics eligible for such services. Only 29% of residents asked patients about their ability to eat regular meals during every patient encounter, most of these being pediatricians. Remarkably, 17% of residents reported never encountering a patient facing FI, while an equal percentage encountered such patients weekly, highlighting the inconsistency in screening and training. Therefore, consistent training practices should be implemented for residents at UMC. Future initiatives will include developing and disseminating educational modules tailored to residents in Lubbock, to improve residents' knowledge and support of patients facing FI.

POSTER #40

Assessing Implicit and Explicit Weight Bias Among Medical Students

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Objective: This study aims to assess implicit and explicit attitudes toward weight amongst medical students in West Texas and analyze the strengths and shortcomings of medical education regarding this issue.

Methods: We utilized both an Omnibus web-based survey and existing retrospective available data as part of a longitudinal study of medical education. This survey was sent out to current medical students via email at the TTUHSC School of Medicine in Lubbock, and includes multiple validated measures of both implicit and explicit bias from the Implicit Association Test and the Anti-Fat Attitudes Questionnaire, respectively. The survey was voluntarily completed by 164 pre-clinical 1st and 2nd year medical students.

Results: Statistical analysis performed on R Software and Microsoft Excel revealed that 61.9% of students exhibit a moderate to strong implicit preference for thinness over obesity and 68.8% of students exhibit a moderate to strong explicit preference. Significance: Weight bias, a prevalent issue in medical education, manifests as stereotypes, negative attitudes, and discriminatory behaviors towards individuals based on their body weight or size. Research continuously reveals a prevalence of weight bias among medical students, which can impact future patient care by perpetuating disparities in healthcare outcomes, such as patient avoidance of care and biased provider decision making.

Conclusions: Our results show that implicit and explicit weight bias is present amongst medical students in West Texas; we conclude that strengthening of medical education (via incorporation of anti-bias training, weight-inclusive language, etc.) is needed in order to improve healthcare outcomes for future patients.

POSTER #41

Obesity and Lower Back Pain: Causal Relationships, Management Strategies, and Clinical Implications
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The objective of this research is to provide a concise overview of the research findings regarding the impact of obesity on lower back pain, including causal relationships, management strategies, and implications for clinical practice.We conducted a literature review to assess the impacts of obesity on lower back pain. Our review included randomized controlled studies, clinical articles, and systematic reviews in order to combine the results and create aggregated conclusions on this topic. The literature highlights the causal relationship between high BMI and dorsopathies like IVDD, LBP, and sciatica, stressing the importance of weight management in reducing lower back pain. A holistic approach integrating lifestyle changes, exercise, and nutrition is crucial. Ultrasound-guided LMBB offers a viable, radiation-free alternative for treating lumbar facet joint pain with comparable efficacy. The research on the impact of obesity on lower back pain holds significant importance as it addresses a prevalent health concern affecting millions worldwide, shedding light on the intricate relationship between weight management, dorsopathies and chronic pain, thus paving the way for more effective interventions to alleviate lower back pain in both obese and non-obese populations.

In conclusion, this research highlights the significant impact of obesity on lower back pain, emphasizing the importance of weight management and holistic approaches for alleviating the burden of dorsopathies. The findings underscore the need for collaborative efforts in pain management clinics and suggest ultrasound-guided LMBB as a viable alternative for treating lumbar facet joint pain, providing practical insights for clinical practice.

POSTER #42

Risk Factors for Surgical Site Infection Following Cesarean Delivery at Texas Tertiary Hospital
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Cesarean delivery (CD) is the most common major surgical procedure performed among birthing patients in the United States. As with any procedure, there is a risk of complications, including surgical site infections (SSI). The risk of complications is increased among overweight and obese patients. This retrospective cohort study aimed to identify unique risk factors of SSIs among patients at University Medical Center (UMC) in Lubbock, Texas to inform future infection reduction efforts. Medical records of patients 12-45 years old who underwent CD between January 1, 2017, and December 31, 2017 at UMC were reviewed. For each patient, SSI status 30 days following CD as well as patient-related and operative-related parameters were collected. Descriptive statistics, bivariate, and logistic regression analyses were performed to pinpoint variables associated with SSI following CD. Of 525 patients, 20 patients had confirmed SSIs (3.81%). Bivariate analysis revealed a statistically significant difference ($p < 0.05$) in the method of fetal monitoring, type of anesthetic, patient's BMI, baby weight, and prevalence of pre-existing diabetes between those with and without SSI. However, pre-existing diabetes was the only risk factor associated with an increased risk of SSI (OR = 8.658, $p = 0.006$) following logistic regression modeling. SSI reduction efforts are often driven by prevention bundles focused on intraoperative risk factors. Our findings highlight the role of modifiable patient-related risk factors in SSI development. With the prevalence of diabetes on the rise (a consequence of the obesity epidemic), diagnosing and treating diabetes in pregnant women may contribute to SSI reduction.

POSTER #43

Medical Nutrition Education and its Impact on Future Physician Practices

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Objective: Nutrition education in US medical schools has historically lacked an adequate number of hours of instruction, which poses barriers to clinical practice as residents and attendings approach patients who may need nutritional intervention. Receiving an inadequate amount of nutrition education can have negative repercussions when it comes to interprofessional relationships as well. We aim to explore the nature of medical nutrition education and how it impacts clinical practice among physicians.

Methods: This project used the TTUHSC School of Medicine P3-1 Honors Project Omnibus Survey, an online survey instrument sent to several affiliated departments of TTUHSC. The questions for this study received 42 responses from TTUHSC residents across different specialties. Linear regression analyses were performed to assess the relationship between receiving an adequate medical nutrition education and clinical practices as a physician. Results & Significance: Whether a resident believed they received adequate nutrition education in medical school was significantly correlated with their confidence in ordering special diets for hospitalized patients ($t = 4.14$, $df = 39$, $p = 1.8e\text{-}4$). Believing they received an adequate nutrition education in medical school was also significantly correlated with their confidence in referring patients to nutrition professionals ($t = 2.75$, $df = 39$, $p = 0.009$).

Conclusions: Overall, it appears that receiving an adequate medical nutrition education during medical school aids in addressing patients' nutritional needs as a physician. This could have implications for potential modifications of medical school curriculum plans. Further research can examine differences in responses depending on where residents attended medical school (US vs. IMG).

POSTER #44

Assessing the Impact of Air Pollution on the Incidence and Progression of Childhood Obesity

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Abstract: Air pollution and obesity are major health issues. It's important to understand how air pollution affects obesity to develop effective solutions. This sets the stage for examining the link between air pollution and childhood obesity. Methods: The internal validity of a systematic review and meta-analysis was assessed by conducting a literature review, which involved analyzing three key articles. Firstly, a cross-sectional study investigated the effects of PM on liver acid dysbiosis. Secondly, a review explored the connection between air pollution, vitamin D deficiency, and heightened obesity risks. Lastly, a correlational study investigated the genetic predispositions to obesity that may manifest phenotypically after exposure to air pollution. Results: The cross-sectional survey found a significant association between air pollution (PM) and MAFLD. The review revealed that high pollution levels can hinder vitamin D absorption in children, leading to low vitamin D levels that contribute to obesity by increasing intracellular calcium in adipocytes. Furthermore, the correlational survey found that PM2.5 and other pollutants are highly genetically correlated with obesity risk, confirming the meta-analysis's claim that exposure to PM2.5, PM1, PM10, and NOx is significantly associated with obesity and increased BMI. Conclusion: This study highlights how air pollution significantly affects obesity-related conditions like genetics, vitamin D deficiency, and dysbiosis. Understanding these links is crucial for developing effective strategies to counteract air pollution's harmful effects on metabolic health, particularly among vulnerable groups such as children. By clarifying these connections, we can develop more precise interventions to address both environmental and metabolic health issues.

POSTER #45

A Relationships Between Nonalcoholic Fatty Liver Disease Indices, Vitamin D Status, Alcohol Consumption, and Cognitive Impairment in a West Texas Elderly Cohort: A Project FRONTIER Study

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Non-Alcoholic fatty liver disease (NAFLD) is becoming an increasingly prevalent disease amongst middle-aged and elderly adults. It is understood that NAFLD is associated with a variety of non-hepatic diseases, including Alzheimer's disease, which has yet to receive thorough investigation. This study aimed to investigate the relationship between cognitive impairment and various markers of liver function as well as serum vitamin D levels and alcohol consumption. Data from 299 participants from Project FRONTIER were analyzed. To assess cognitive function, we used the Repeatable Battery for Assessment of Neuropsychological Status (RBANS). Liver dysfunction was assessed using two different measures: serum biomarkers of liver function and diagnostic indexes for NAFLD and liver fibrosis. The serum biomarkers we used are Gamma-glutamyl transferase (ggt), Aspartate aminotransferase (ast), Alanine transaminase (alt), Alkaline phosphatase (alkp), Total protein (bw_tprot), Total bilirubin (bw_tbili), and triglycerides (trigy). The four diagnostic indexes we used are the fatty liver index (FLI), NAFLD fibrosis score (NFS), hepatic steatosis index (HSI), and fibrosis-4 (FIB-4). Data were analyzed using correlation matrixes and regression analyses. We discovered significant negative correlations between serum bilirubin, total serum protein, FIB-4 index, and NFS index, and RBANS total score. We also found a significant positive correlation between alcohol intake and RBANS. Finally, we found a significant negative correlation between the indexes HSI and FLI, and vit. D. In conclusion, our findings support the hypothesis that liver disease is associated with cognitive dysfunction within elderly populations and identifies potential diagnostic measures that could improve future protocols for identification and treatment.

POSTER #46

Unlocking the Path to Diabetes Remission: Holistic Approach to Health-A Case Report

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Introduction: The world is advancing from treating diabetes to curing diabetes, especially non-insulin-dependent diabetes. The way to cure diabetes is to lose weight, which is being achieved surgically, however, with complications. The recent emphasis on healthy lifestyle modifications helps lose weight with good glycemic control and diabetes remission. Case presentation: A 54-year-old gentleman has a history of diabetes, hypertension, hyperlipidemia, depression, constipation, osteoarthritis, erectile dysfunction, and morbid obesity with loss and regain of weight after gastric bypass. The patient started intermittent fasting for 20 hours daily with a low-carb diet, regular exercise, good sleeping patterns, and negative substance use and has lost 87 lbs over a duration of one year. After the weight loss, the patient's blood glucose level was well controlled, allowing de-escalation and finally discontinuation of Oral hypoglycemics. In addition, the patient's bowel movements became regular, along with improved mental health, mobility, knee health, and social relationships.

Discussion: Loss of weight is associated with decreased insulin resistance and better glycemic control, as evidenced by the literature and observed in our patient helping in a reversal of diabetes. While limited mobility from knee osteoarthritis, morbid obesity, and inability to work initially motivated the patient, improvement in overall health became the reinforcing factor for maintaining a healthy lifestyle and maintaining the reversal.

Conclusion: Maintaining a healthy lifestyle with proper eating habits, regular exercise, and sleeping patterns can help reverse diabetes and improve overall health.