The broad, long-term objective of the proposal is to characterize some-gender interactions during adult spermatogenesis. The proposal will utilize biochemistry, also directed immunogold, in cultured cells and immunohistochemistry, genetics, RNA interference, targeted protein degradation and rescue in the adult Drosophila testis to determine how a secreted, conserved, immunoglobulin (Ig) domain protein maintains the blood-testis barrier (BTB) in somatic supports cells of adult testes. We will capitalize upon the powerful genetics available in Drosophila, as well as the ability to unequivocally identity the germ cell types (GSCs), spermatogonia and somatic support cells in the Drosophila testis. This proposal is supported by unpublished results demonstrating that: (1) the secreted protein is expressed in somatic cells of the testis and is required for spermatogonial differentiation and for robust expression of a BTB domain protein; (2) the only known receptor for the secreted protein is a neuronal adhesion protein that is required or expressed in the adult testis, indicating that another receptor is involved; (3) another receptor with homology to known ones is expressed in somatic membranes of the adult testis and it localizes to spermatids similar to the secreted protein; (4) this other receptor is required for maintenance of the blood-testis barrier during development; suggesting a conserved barrier function. Aim 1 centers on using in vitro assays (cell-cell aggregation, cell-purification followed by mass spectrometry, structure-function analysis) to determine how the secreted ligand and receptor interact. In drosophila, the BTB domain receptor (BTB/POC) is known to interact with a BTB domain protein ( btb/POC) that is thought to assist these interactions occur in the adult testis. The Aim 2 is focused on determining whether the permeability barrier that is completely disrupted in transgenic flies lacking the ligand or receptor. These experiments are designed to reveal mechanistic insights into how the BTB domain is maintained in adults. The studies in this proposal will increase the knowledge base about signals that maintain spermatogonial differentiation during adult stages and will foster new avenues of research into mechanisms and treatments for age-related male infertility.

Yes
Post Baccalaureate Graduate,Graduate student,Post Doctoral trainees
Graduate Student and higher
No special training requirements required
Erika Bach
Biochemistry and Molecualr Pharmacology
Somatic control of germine differentiation in spermatogenesis

Yes
Not specified
Not specified
Not specified
Narjes Razavian
Cell Biologists
Early Detection for Under-represented Populations via Fur Mutidimensional Self-Supervised Learning
not specified
not specified
not specified
not specified

Yes
Graduate student
Graduate student
Not specified
Leonardo Trasande
Pediatrics and Population Health
Monitoring the Impact of Ambient Heat Exposure on Child and Caregiver Mental Health within the Community
not specified
not specified
not specified
not specified

Yes
Graduate student,Post Doctoral trainee,Junior Faculty
Graduate student,Post Doctoral trainee,Junior Faculty
Advanced statistical analysis skills; experience working with large datasets
Brian Elbel
INTERNAL MEDICINE/EMERGENCY MEDICINE
The Influence of Sugar-Sweetened Beverages Taxes on Fast Food Restaurant Purchases: An Evaluation Using National Sales Data
not specified
not specified
not specified
not specified

Yes
Not specified
Not specified
Not specified
Moses Chao
PSYCHIATRY
Targets of oxytocin signaling
not specified
not specified
not specified
not specified

Undergraduate,Post Baccalaureate Graduate,Graduate student,Post Doctoral trainees
None
Damiian Bierdt
ANATOMY/CELL BIOLOGY
Structure and function of MCE systems in bacteria
8/3/2022
R35GM128777
7/31/2023

The bacterial outer membrane is a lipid bilayer that plays a key role in resistance to antibiotics, detergents, and other external stresses. Despite decades of research on the bacterial envelope, it is unknown how phospholipids are trafficked between the bacterial inner and outer membranes, through the intervening hydrophilic space of the periplasm. We recently discovered that members of the mammalian cell entry (MCE) protein family form structurally diverse, heat-stable rings and barnes, and that some of these proteins may form "fogdes" or "bipes" between the inner and outer membranes to facilitate lipid transport (Bierdt et al. Cell 2017). In this project, we will use computational tools, as well as a periplasmic fluorescent protein system that binds the inner and outer membranes, to use cryo-EM and cryo-ET to determine the structure and function of MCE proteins. These proteins are part of a universal protein translocation system that includes the inner membrane (IM) peptidoglycan sheets, the outer membrane (OM) peptidoglycan sheets, the periplasmic space, and the OM sheets that lie between the IM and OM sheets. We will use cryo-EM to reveal the structure of MCE complexes and their components assembled into larger inner membranes, outer membranes, and even transmembrane complexes. We will also employ proteomic and biochemical tools to test hypotheses and probe the mechanism of trafficking by MCE systems, including the direction of transport, how transport activity is regulated, how ligands are extracted from and into the inner and outer membranes, how the proteins are transported across the peptidoglycan bilayers, and how they are transported through the peptidoglycan bilayers. This project will advance our understanding of fundamental biological processes and potentially enhance new antibiotics that target the essential functions of MCE protein. In addition, the presence of MCE proteins in some diseases, such as bacterial endocarditis, suggests that understanding E. coli MCE systems will also have direct implications for lipid trafficking in other bacterial endocarditis-organisms.
Project Summary Transgenic-age (TA) adult Wifi—between ages 18 to 25 is a distinct and critical development period where unique biological, psychological, and social changes are occurring. Brain development continues into the latter part of this period, with neurological structures associated with reward sensitivity and self-regulation continuing to form. Social roles are in flux, with reduced parental monitoring and shifts in societal expectations that precipitate different functioning at the personal, familial, and community levels. Substance use disorders (SUDs) are prevalent among young adults, and TA adults are likely to seek out substances to self-medicate [7].

The aim of this research is to test the hypothesis that effective treatment of OUD at this age has the potential for large long-term payoffs. Over the past decade, there has been a large increase in the number of people with addiction (ODS) among TA adults. TA adults are also more likely to obtain scientifically supported treatment and more likely to be treated for OUD. Although the most efficacious treatment for OUD is pharmacotherapy, reliable studies demonstrate that there are large gaps in receipt of medications for opiate use disorder (OUD), low adherence to these medications, and poor outcomes for most TA adults who ever enter treatment. Few current studies of quality in OUD treatment programs account for individual, organizational, and contextual factors that may affect outcomes. A better understanding of the program characteristics associated with higher quality care for TA adults with OUD will inform organizational changes, payer incentives, and government policies to improve treatment for this poorly served population. Because of rapid organizational changes caused by the COVID-19 public health emergency, there is an opportunity to explore whether new forms of SUD treatment delivery—telehealth, liberation in treatment (LIT), telephonic counseling, and integrated behavioral health (IBH)—will differ in effectiveness from multiple sources, including Medicaid and a state registry of SUD treatment episodes. To examine these differences, we will enroll 20 TA adults receiving treatment for OUD between 2020 and 2022. To assess (1) access to and (2) adherence to pharmacotherapy and retention in treatment; and (3) adverse events (e.g., overdoses). To guide our study, we propose a conceptual model that proposes an integrative qualitative, quantitative, and outcome- measurement approach to evaluate the quality of OUD treatment for TA adults while accounting for individual and community level factors associated with the quality of these programs in order to deliver care.

Development of a career development plan in clinical-researcher training and for my research. Without having a well-defined career path, one may find themselves in situations where they are not fully engaged and are not using their skills effectively. A career development plan can help me identify my long-term goals, determine the skills I need to acquire, and identify the resources I need to pursue those goals. It also helps me stay organized and focused on my research, which can be challenging in a field as diverse as neuroscience.

A Significant issue in the current opioid epidemic is how to effectively treat opioid dependence, particularly in young adults who are most at risk. This is a critical age for treating OUD, as successful treatment can have long-term benefits. However, current treatment options are limited and may not be effective for all individuals. Therefore, there is a need for new and innovative approaches to treating OUD in this age group.

Recent evidence suggests that hippocampal-neocortical interactions play a crucial role in the development and maintenance of addiction, and thus, targeting these interactions may be a promising strategy for treating OUD. In this study, we aim to investigate the role of hippocampal-neocortical interactions in OUD and their potential as a target for intervention.

The study will be conducted with a sample of young adults who are currently grappling with OUD. Participants will undergo a series of cognitive and behavioral assessments to evaluate their baseline levels of hippocampal-neocortical interactions, as well as their responses to different therapeutic interventions. The primary outcomes of interest will be the changes in hippocampal-neocortical interactions following treatment, which will be assessed using functional MRI (fMRI) scans. We will also evaluate the impact of different therapeutic approaches on these interactions, such as medication-assisted treatment, behavioral therapy, or psychosocial interventions. Additionally, we will explore the potential mediating and moderating effects of demographic and clinical variables, such as age, sex, and duration of substance use, on the relationship between hippocampal-neocortical interactions and OUD treatment outcomes.

In conclusion, this study represents an exciting opportunity to advance our understanding of the role of hippocampal-neocortical interactions in OUD and to develop novel and effective treatment strategies for this critical age group.
<table>
<thead>
<tr>
<th>Study Title</th>
<th>Principal Investigator</th>
<th>Co-investigators</th>
<th>Funding Source</th>
<th>Project Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Study A</td>
<td>Dr. Smith</td>
<td>Dr. Johnson</td>
<td>NIH Grant</td>
<td>Investigate the effects of diet on gut health.</td>
</tr>
<tr>
<td>Study B</td>
<td>Dr. Brown</td>
<td>Dr. Lee</td>
<td>Private Foundation</td>
<td>Develop a new treatment for diabetes.</td>
</tr>
<tr>
<td>Study C</td>
<td>Dr. White</td>
<td>Dr. Green</td>
<td>State Funding</td>
<td>Study the impact of climate change on coastal ecosystems.</td>
</tr>
</tbody>
</table>

**Legend**

- NIH: National Institutes of Health
- Private Foundation: Foundation X
- State Funding: State Department of Health
Atherosclerotic cardiovascular disease (ACVD) is the leading cause of mortality and disability worldwide, even in optimally treated patients. Thus, the impact of many immune cell types on atherosclerosis is well-established; the contribution of CD8+ T cells to the disease pathology remains to be further elucidated. In previous work using unbiased single-cell (sc) analyses to study the immune composition of human atherosclerotic plaques, we have now characterized plaque resident memory (TRM) CD8+ T cells associated with clinical CV outcomes. These CD8+ T cells are known to exit the bloodstream and infiltrate into atherosclerotic plaques, where they contribute to plaque progression in mice. However, information on how CD8+ T cells contribute to atherosclerotic plaque vulnerability and cardiovascular (CV) events is limited and remains to be fully understood. In preliminary studies, we identified the transcriptional regulator Zeb2 as a top candidate master regulator of plaque CD8+ T cell proatherogenic alterations. We hypothesize that Zeb2 is a key driver of the activation and cytotoxicity of effector TRM CD8+ T cells in atherosclerotic plaques and that these alterations contribute to disease progression and plaque vulnerability. We also contend that its dysregulation is implicated in the reprogramming of Th17/Th22 CD8+ T cells found in plaques of patients with recent stroke. We propose two independent aims to study the role of Zeb2 in plaque vulnerability and CV events. In Aim 1, we will dissect the Zeb2-mediated activation of plaque TRM CD8+ T cells and determine their association with plaque vulnerability and cardiovascular (CV) events. In Aim 2, we will identify how Zeb2 mediates TRM CD8+ T cell dysregulation of atherosclerotic CV outcomes and determine how Zeb2 dysregulation in CD8+ T cells affect their exhaustion reprogramming and whether these alterations contribute to plaque vulnerability and associated CV outcomes. We anticipate that the findings in Aim 2 will open new and previously unappreciated cellular and molecular mechanisms associated with plaque vulnerability and CV outcomes. These findings could also drive the development of a new therapeutic strategy to mitigate lesions in the future design of novel, molecularly targeted immunotherapies to prevent CV outcomes in patients with cardiac and coronary disease.

Over 1.4 million people experience homelessness in the U.S. each year. A large body of evidence has demonstrated the bidirectional relationship between homelessness and substance use (SU). COVID-19 pandemic has greatly accentuated the existing and overwhelming crises of homelessness and SU. Locally, Seattle, Washington is home to one of the largest populations of homeless people in the U.S. and nearly one-quarter of those homeless individuals have begun to engage in SU. Over 1.4 million people experienced homelessness in Seattle each year, over half of whom have engaged in SU. The SU epidemic has only worsened in the past two years due to the COVID-19 pandemic. We propose to study the role that a mixed methods approach can play in understanding the mechanisms driving the bidirectional relationship between SU and homelessness in Seattle. Specifically, we propose to examine the role that the COVID-19 pandemic has played in increasing SU among people who use drugs (PWUD) and in driving SU among homeless individuals. We will use a mixed methods approach that includes interviews, surveys, and/or focus groups with participants to understand the mechanisms driving the bidirectional relationship between SU and homelessness in Seattle. 

Atherosclerotic cardiovascular disease (ACVD) is the leading cause of mortality and disability worldwide, even in optimally treated patients. Thus, the impact of many immune cell types on atherosclerosis is well-established; the contribution of CD8+ T cells to the disease pathology remains to be further elucidated. In previous work using unbiased single-cell (sc) analyses to study the immune composition of human atherosclerotic plaques, we have now characterized plaque resident memory (TRM) CD8+ T cells associated with clinical CV outcomes. These CD8+ T cells are known to exit the bloodstream and infiltrate into atherosclerotic plaques, where they contribute to plaque progression in mice. However, information on how CD8+ T cells contribute to atherosclerotic plaque vulnerability and cardiovascular (CV) events is limited and remains to be fully understood. In preliminary studies, we identified the transcriptional regulator Zeb2 as a top candidate master regulator of plaque CD8+ T cell proatherogenic alterations. We hypothesize that Zeb2 is a key driver of the activation and cytotoxicity of effector TRM CD8+ T cells in atherosclerotic plaques and that these alterations contribute to disease progression and plaque vulnerability. We also contend that its dysregulation is implicated in the reprogramming of Th17/Th22 CD8+ T cells found in plaques of patients with recent stroke. We propose two independent aims to study the role of Zeb2 in plaque vulnerability and CV events. In Aim 1, we will dissect the Zeb2-mediated activation of plaque TRM CD8+ T cells and determine their association with plaque vulnerability and cardiovascular (CV) events. In Aim 2, we will identify how Zeb2 mediates TRM CD8+ T cell dysregulation of atherosclerotic CV outcomes and determine how Zeb2 dysregulation in CD8+ T cells affect their exhaustion reprogramming and whether these alterations contribute to plaque vulnerability and associated CV outcomes. We anticipate that the findings in Aim 2 will open new and previously unappreciated cellular and molecular mechanisms associated with plaque vulnerability and CV outcomes. These findings could also drive the development of a new therapeutic strategy to mitigate lesions in the future design of novel, molecularly targeted immunotherapies to prevent CV outcomes in patients with cardiac and coronary disease.

Atherosclerotic cardiovascular disease (ACVD) is the leading cause of mortality and disability worldwide, even in optimally treated patients. Thus, the impact of many immune cell types on atherosclerosis is well-established; the contribution of CD8+ T cells to the disease pathology remains to be further elucidated. In previous work using unbiased single-cell (sc) analyses to study the immune composition of human atherosclerotic plaques, we have now characterized plaque resident memory (TRM) CD8+ T cells associated with clinical CV outcomes. These CD8+ T cells are known to exit the bloodstream and infiltrate into atherosclerotic plaques, where they contribute to plaque progression in mice. However, information on how CD8+ T cells contribute to atherosclerotic plaque vulnerability and cardiovascular (CV) events is limited and remains to be fully understood. In preliminary studies, we identified the transcriptional regulator Zeb2 as a top candidate master regulator of plaque CD8+ T cell proatherogenic alterations. We hypothesize that Zeb2 is a key driver of the activation and cytotoxicity of effector TRM CD8+ T cells in atherosclerotic plaques and that these alterations contribute to disease progression and plaque vulnerability. We also contend that its dysregulation is implicated in the reprogramming of Th17/Th22 CD8+ T cells found in plaques of patients with recent stroke. We propose two independent aims to study the role of Zeb2 in plaque vulnerability and CV events. In Aim 1, we will dissect the Zeb2-mediated activation of plaque TRM CD8+ T cells and determine their association with plaque vulnerability and cardiovascular (CV) events. In Aim 2, we will identify how Zeb2 mediates TRM CD8+ T cell dysregulation of atherosclerotic CV outcomes and determine how Zeb2 dysregulation in CD8+ T cells affect their exhaustion reprogramming and whether these alterations contribute to plaque vulnerability and associated CV outcomes. We anticipate that the findings in Aim 2 will open new and previously unappreciated cellular and molecular mechanisms associated with plaque vulnerability and CV outcomes. These findings could also drive the development of a new therapeutic strategy to mitigate lesions in the future design of novel, molecularly targeted immunotherapies to prevent CV outcomes in patients with cardiac and coronary disease.

Atherosclerotic cardiovascular disease (ACVD) is the leading cause of mortality and disability worldwide, even in optimally treated patients. Thus, the impact of many immune cell types on atherosclerosis is well-established; the contribution of CD8+ T cells to the disease pathology remains to be further elucidated. In previous work using unbiased single-cell (sc) analyses to study the immune composition of human atherosclerotic plaques, we have now characterized plaque resident memory (TRM) CD8+ T cells associated with clinical CV outcomes. These CD8+ T cells are known to exit the bloodstream and infiltrate into atherosclerotic plaques, where they contribute to plaque progression in mice. However, information on how CD8+ T cells contribute to atherosclerotic plaque vulnerability and cardiovascular (CV) events is limited and remains to be fully understood. In preliminary studies, we identified the transcriptional regulator Zeb2 as a top candidate master regulator of plaque CD8+ T cell proatherogenic alterations. We hypothesize that Zeb2 is a key driver of the activation and cytotoxicity of effector TRM CD8+ T cells in atherosclerotic plaques and that these alterations contribute to disease progression and plaque vulnerability. We also contend that its dysregulation is implicated in the reprogramming of Th17/Th22 CD8+ T cells found in plaques of patients with recent stroke. We propose two independent aims to study the role of Zeb2 in plaque vulnerability and CV events. In Aim 1, we will dissect the Zeb2-mediated activation of plaque TRM CD8+ T cells and determine their association with plaque vulnerability and cardiovascular (CV) events. In Aim 2, we will identify how Zeb2 mediates TRM CD8+ T cell dysregulation of atherosclerotic CV outcomes and determine how Zeb2 dysregulation in CD8+ T cells affect their exhaustion reprogramming and whether these alterations contribute to plaque vulnerability and associated CV outcomes. We anticipate that the findings in Aim 2 will open new and previously unappreciated cellular and molecular mechanisms associated with plaque vulnerability and CV outcomes. These findings could also drive the development of a new therapeutic strategy to mitigate lesions in the future design of novel, molecularly targeted immunotherapies to prevent CV outcomes in patients with cardiac and coronary disease.
PROJECT SUMMARY/ABSTRACT: This research will examine how significant disruptions to children's health, education and overall well-being during the COVID-19 pandemic created lasting influences on health, development and social injustices through the mechanisms and the risk for long-term health outcomes. Effects of the pandemic are unevenly distributed among children, particularly with respect to socioeconomic status, race/ethnicity, and income, and are anticipated to reflect and exacerbate already existing health disparities in the United States. As a result, the COVID-19 pandemic creates an urgent need to understand the intergenerational, neighborhood-level, and contextual influences on children's health and outcomes, and to develop effective population-level interventions and policies. This proposal seeks to address one of the most pressing public health challenges in the United States by developing a unique, comprehensive, and powerful set of linked child-level administrative data. \textbf{Aim 2:} Determine how child-level and neighborhood COVID-19 vaccine coverage rates influence the course of the COVID pandemic, with a focus on disparities. \textbf{Aim 3:} Determine the role of neighborhood and school resources in exacerbating or mitigating health and educational disparities due to the COVID pandemic.

Yes

Graduate student, Post Doctoral Trainee, Junior Faculty

Advanced data analysis, advanced statistics

Brian Elbel

INTERNAL MEDICINE/ MEDICINE/MEDICINE

Onthalmology

Cellular and genetic definitions in keratoconus

Shukla Chakravarti

Medicine & Prev Medicine

NYU Long Island School of Medicine

Biogenesis of Athapagic Lipoproteins

Antibody Core One of the major features of this BEHR Initiative proposal on "Oxytocin Modulation of Neural Circuit Function and Behavior" is the Antibody Core, Antibody Production Research Support Core. Each of the Project Leaders is planning-oxygen release and the Antibody Core will work closely with the other project leaders to support design studies, data collection, data curation, statistical analysis, interpretation, and publication of the study outcomes. The Antibody Core will provide a critical role in creating data collection instruments and managing data in real-time for the project leaders to improve proper data validation. The Antibody Core will also create standardized requirements and scripts to perform regular data quality checks, develop a formal data sharing protocol, and oversee the data request and distribution. The biostatistics personnel from C2 will be actively involved in producing each project protocol, including sample size and power analysis. We will work with each project leader to develop rigorous and reproducible statistical methods to analyze and interpret data. We will set up a high-performance computing cluster with 80 compute nodes to run all the data analyses, as an integral part of the PPG. All C1 members will attend all the PPG's monthly meetings and focus on analyzing and interpreting data generated by the projects and other cores. C1 will also educate the junior members of the PPG on biostatistics and bioinformatics methods and techniques.

Yes

Post Baccalaureate Graduate, Graduate student, Post Doctoral Trainee, Junior Faculty

Analytical Chemistry, Biochemistry, Statistical Analysis with R. Training available in my group.

Joan Alemán

NYU Long Island School of Medicine

Biogenesis of Athapagic Lipoproteins

Antibody Core One of the major features of this BEHR Initiative proposal on "Oxytocin Modulation of Neural Circuit Function and Behavior" is the Antibody Core, Antibody Production Research Support Core. Each of the Project Leaders is planning-oxygen release and the Antibody Core will work closely with the other project leaders to support design studies, data collection, data curation, statistical analysis, interpretation, and publication of the study outcomes. The Antibody Core will provide a critical role in creating data collection instruments and managing data in real-time for the project leaders to improve proper data validation. The Antibody Core will also create standardized requirements and scripts to perform regular data quality checks, develop a formal data sharing protocol, and oversee the data request and distribution. The biostatistics personnel from C2 will be actively involved in producing each project protocol, including sample size and power analysis. We will work with each project leader to develop rigorous and reproducible statistical methods to analyze and interpret data. We will set up a high-performance computing cluster with 80 compute nodes to run all the data analyses, as an integral part of the PPG. All C1 members will attend all the PPG's monthly meetings and focus on analyzing and interpreting data generated by the projects and other cores. C1 will also educate the junior members of the PPG on biostatistics and bioinformatics methods and techniques.

Yes

Not specified

Not specified

Moses Chao

PSYCHIATRY

Antibody Core

Ricin includes a well-established human carcinogen. Epidemiological studies have reported an increased incidence of lung and breast cancer following long-term exposure to ricin-coated particles due to environmental inhalation or occupational exposure. Growing evidence suggests that ricin may also play a role in the pathogenesis of lung carcinogenesis. However, the impact of ricin exposure on the epithelium and the potential role of RNA modification in lung carcinogenesis have not been explored. Our preliminary studies discovered that human bronchial epithelial cells exposed to ricin-coated particles exhibited reduced RNA stability of microRNA-21 (miR-21), an important gene that was previously shown to play a role in the pathogenesis of lung carcinogenesis. Therefore, we hypothesized that miR-21 reductomes may be also involved in the pathogenesis of lung carcinogenesis. To test our hypothesis, we developed a novel cell culture system that allows for the study of the effects of ricin-coated particles on miR-21 reductomes. Our results demonstrated that ricin-induced lung carcinogenesis is related to miR-21 reductomes. Therefore, our approach provides a novel strategy for the identification of novel miR-21 reductomes in lung carcinogenesis.

Yes

Not specified

Not specified

Hong Sun

PUBLIC HEALTH & PREV MEDICINE

ALKSH and indole-3-carbinol

Lung carcinogenesis

Ricin includes a well-established human carcinogen. Epidemiological studies have reported an increased incidence of lung and breast cancer following long-term exposure to ricin-coated particles due to environmental inhalation or occupational exposure. Growing evidence suggests that ricin may also play a role in the pathogenesis of lung carcinogenesis. However, the impact of ricin exposure on the epithelium and the potential role of RNA modification in lung carcinogenesis have not been explored. Our preliminary studies discovered that human bronchial epithelial cells exposed to ricin-coated particles exhibited reduced RNA stability of microRNA-21 (miR-21), an important gene that was previously shown to play a role in the pathogenesis of lung carcinogenesis. Therefore, we hypothesized that miR-21 reductomes may be also involved in the pathogenesis of lung carcinogenesis. To test our hypothesis, we developed a novel cell culture system that allows for the study of the effects of ricin-coated particles on miR-21 reductomes. Our results demonstrated that ricin-induced lung carcinogenesis is related to miR-21 reductomes. Therefore, our approach provides a novel strategy for the identification of novel miR-21 reductomes in lung carcinogenesis.

Yes

Not specified

Not specified

Ricin includes a well-established human carcinogen. Epidemiological studies have reported an increased incidence of lung and breast cancer following long-term exposure to ricin-coated particles due to environmental inhalation or occupational exposure. Growing evidence suggests that ricin may also play a role in the pathogenesis of lung carcinogenesis. However, the impact of ricin exposure on the epithelium and the potential role of RNA modification in lung carcinogenesis have not been explored. Our preliminary studies discovered that human bronchial epithelial cells exposed to ricin-coated particles exhibited reduced RNA stability of microRNA-21 (miR-21), an important gene that was previously shown to play a role in the pathogenesis of lung carcinogenesis. Therefore, we hypothesized that miR-21 reductomes may be also involved in the pathogenesis of lung carcinogenesis. To test our hypothesis, we developed a novel cell culture system that allows for the study of the effects of ricin-coated particles on miR-21 reductomes. Our results demonstrated that ricin-induced lung carcinogenesis is related to miR-21 reductomes. Therefore, our approach provides a novel strategy for the identification of novel miR-21 reductomes in lung carcinogenesis.

Yes

Not specified

Not specified

Ricin includes a well-established human carcinogen. Epidemiological studies have reported an increased incidence of lung and breast cancer following long-term exposure to ricin-coated particles due to environmental inhalation or occupational exposure. Growing evidence suggests that ricin may also play a role in the pathogenesis of lung carcinogenesis. However, the impact of ricin exposure on the epithelium and the potential role of RNA modification in lung carcinogenesis have not been explored. Our preliminary studies discovered that human bronchial epithelial cells exposed to ricin-coated particles exhibited reduced RNA stability of microRNA-21 (miR-21), an important gene that was previously shown to play a role in the pathogenesis of lung carcinogenesis. Therefore, we hypothesized that miR-21 reductomes may be also involved in the pathogenesis of lung carcinogenesis. To test our hypothesis, we developed a novel cell culture system that allows for the study of the effects of ricin-coated particles on miR-21 reductomes. Our results demonstrated that ricin-induced lung carcinogenesis is related to miR-21 reductomes. Therefore, our approach provides a novel strategy for the identification of novel miR-21 reductomes in lung carcinogenesis.

Yes

Not specified

Not specified

Ricin includes a well-established human carcinogen. Epidemiological studies have reported an increased incidence of lung and breast cancer following long-term exposure to ricin-coated particles due to environmental inhalation or occupational exposure. Growing evidence suggests that ricin may also play a role in the pathogenesis of lung carcinogenesis. However, the impact of ricin exposure on the epithelium and the potential role of RNA modification in lung carcinogenesis have not been explored. Our preliminary studies discovered that human bronchial epithelial cells exposed to ricin-coated particles exhibited reduced RNA stability of microRNA-21 (miR-21), an important gene that was previously shown to play a role in the pathogenesis of lung carcinogenesis. Therefore, we hypothesized that miR-21 reductomes may be also involved in the pathogenesis of lung carcinogenesis. To test our hypothesis, we developed a novel cell culture system that allows for the study of the effects of ricin-coated particles on miR-21 reductomes. Our results demonstrated that ricin-induced lung carcinogenesis is related to miR-21 reductomes. Therefore, our approach provides a novel strategy for the identification of novel miR-21 reductomes in lung carcinogenesis.
Tanya Sippy, compression can change cellular behavior to drive migration of cells to other organs or not specified. None.

Yes

Post Baccalaureate, Graduate, Post Doctoral trainees

Post Baccalaureate, Graduate, Post Doctoral trainees

Carla Nasca, PSYCHIATRY

A translational approach for novel mechanisms of epigenetic regulation in treatment response: toward a precision medicine model

Treatments resistant depression (TRD) is a leading cause of illness and disability worldwide; there is a dearth of new mechanistic models for development of novel therapeutic strategies. Studies to date showed that administration of LAC, a pan cellular mitochondrial biologic, leads to a rapid and persistent antidepressant like response by increasing histone acetyltransferase (HATs) activity and the related expression of a range of cellular factors. Inhibitors of glutamate release (iGluRs) receptor in circuits implicated in TRD. Furthermore, LAC levels are increased in TRD patients and decreased in treatment responders. Our model involves determining the mechanisms of LAC effects in TRD treatment responders and non-responders. We will test the hypothesis that LAC modifies pathways that are involved in epigenetic regulation of TRD, using epigenetic and functional assays in our TRD model. Our hypothesis will be tested in a 교wm MCE system.

Yes

Undergraduate, Post Baccalaureate, Graduate, Graduate student, Post Doctoral trainees

Undergraduate, Post Baccalaureate, Graduate, Graduate student, Post Doctoral trainees

Damian Elbert, ANATOMY/CELL BIOLOGY

Structural characterization of MCE transport systems from Mycobacterium tuberculosis

We can train people, but molecular biology skills are useful!

Yes

Post Baccalaureate, Graduate, Post Doctoral trainees, Junior Faculty

Post Baccalaureate, Graduate, Post Doctoral trainees, Junior Faculty

Tanya Sippy, PSYCHIATRY

Sensory Plasticity in the Auditory Striatum as an Impetus for Action Control

Physical pressure is fundamentally important for cancer biology, but its effects remain poorly understood. When solid tumors grow confined within surrounding tissue, they build compressive stress. Given that cells evolved to function in a stable mechanical environment, even slight changes in pressure perturb cellular function. Tumor cells that grow under conditions of high pressure are forced to adapt to ongoing stress. We have therefore proposed an innovative hypothesis that the physical properties of cells, and cellular behavior. We have developed two new technologies to overcome this limitation: First, we created a gene that enables cells to produce a steady supply of chemo-tropic small molecules. Second, we developed microfluidic devices to control compressive stress, either quickly or slowly, while maintaining a constant chemical environment. We will use these devices to test the effect of high pressure on cancer cell morphology and functionality. We will also explore the role of compressive stress in regulating gene expression and protein localization.

Yes

Undergraduate, Post Baccalaureate, Graduate, Graduate student, Post Doctoral trainees, Junior Faculty

Undergraduate, Post Baccalaureate, Graduate, Graduate student, Post Doctoral trainees, Junior Faculty

Liam Holt, PATHOLOGY

Cancer under pressure: Mechanisms of adaptation to compressive stress

We can train people, but molecular biology skills are useful!

Yes

Post Baccalaureate, Graduate, Post Doctoral trainees, Junior Faculty

Post Baccalaureate, Graduate, Post Doctoral trainees, Junior Faculty

Carla Nasca, PSYCHIATRY

A translational approach for novel mechanisms of epigenetic regulation in treatment response: toward a precision medicine model

Treatments resistant depression (TRD) is a leading cause of illness and disability worldwide; there is a dearth of new mechanistic models for development of novel therapeutic strategies. Studies to date showed that administration of LAC, a pan cellular mitochondrial biologic, leads to a rapid and persistent antidepressant like response by increasing histone acetyltransferase (HATs) activity and the related expression of a range of cellular factors. Inhibitors of glutamate release (iGluRs) receptor in circuits implicated in TRD. Furthermore, LAC levels are increased in TRD patients and decreased in treatment responders. Our model involves determining the mechanisms of LAC effects in TRD treatment responders and non-responders. We will test the hypothesis that LAC modifies pathways that are involved in epigenetic regulation of TRD, using epigenetic and functional assays in our TRD model. Our hypothesis will be tested in a 교wm MCE system.

Yes

Undergraduate, Post Baccalaureate, Graduate, Graduate student, Post Doctoral trainees, Junior Faculty

Undergraduate, Post Baccalaureate, Graduate, Graduate student, Post Doctoral trainees, Junior Faculty

Damian Elbert, ANATOMY/CELL BIOLOGY

Structural characterization of MCE transport systems from Mycobacterium tuberculosis

We can train people, but molecular biology skills are useful!

Yes

Post Baccalaureate, Graduate, Post Doctoral trainees, Junior Faculty

Post Baccalaureate, Graduate, Post Doctoral trainees, Junior Faculty

Tanya Sippy, PSYCHIATRY

Sensory Plasticity in the Auditory Striatum as an Impetus for Action Control

Physical pressure is fundamentally important for cancer biology, but its effects remain poorly understood. When solid tumors grow confined within surrounding tissue, they build compressive stress. Given that cells evolved to function in a stable mechanical environment, even slight changes in pressure perturb cellular function. Tumor cells that grow under conditions of high pressure are forced to adapt to ongoing stress. We have therefore proposed an innovative hypothesis that the physical properties of cells, and cellular behavior. We have developed two new technologies to overcome this limitation: First, we created a gene that enables cells to produce a steady supply of chemo-tropic small molecules. Second, we developed microfluidic devices to control compressive stress, either quickly or slowly, while maintaining a constant chemical environment. We will use these devices to test the effect of high pressure on cancer cell morphology and functionality. We will also explore the role of compressive stress in regulating gene expression and protein localization.

Yes

Post Baccalaureate, Graduate, Post Doctoral trainees, Junior Faculty

Post Baccalaureate, Graduate, Post Doctoral trainees, Junior Faculty

Liam Holt, PATHOLOGY

Cancer under pressure: Mechanisms of adaptation to compressive stress

We can train people, but molecular biology skills are useful!
Beneficial to have some analytic programming, problem solving and neuroimaging experience but not critical

Neural and affective mechanisms underlying prospective self-control costs

Self-control failures are a universal challenge for healthy and clinical populations. Recent theoretical and empirical work suggests these failures may arise from cognitive costs associated with exerting control. However, traditional self-control paradigms do not provide a methodological platform to quantify these costs. Further, we know little about the neural basis of self-control costs nor how these representations change under different classes of psychological stress, which is a major gap in our understanding of self-control failure to test how this metric relates to cognitive function, including bi-directional interplay between human-targeted medications and those baseline values function lower.

RADIATION- DIAGNOSTIC/ONCOLOGY

Brain Effects of Lifetime Ego

Racial/Ethnic Discrimination on the LC-NE Function and the Development of Alzheimer’s Disease

Migrant Advise Effects of COVID-19 through Preventive Interventions for Family with Young Children Living in Poverty

Public health diseases, such as COVID-19, have disproportionate consequences on low-income and racial/ethnic minority communities through pathways that likely intersect with poverty and racial and ethnic disparities. Young children are vulnerable to deleterious effects of the pandemic on psychosocial development but have received less attention and resources. Preventive interventions for related health disparities are well established in practice, including parental self-control practices, which are critical determinants of psychosocial and cognitive development. However, due to the diversity and complexity of the pandemic, children have been exposed to a variety of factors, including COVID-19 infection, parental work stress, and social isolation. These factors can impact children’s access to resources, family functioning, and overall well-being.

We propose a unique opportunity to determine whether healthcare and community-based interventions initially targeting pathways of adversity for young children living in poverty can prevent the negative outcomes of COVID-19. We will examine these critical issues by using and harmonizing seven data sets across four studies, including three NICHD R01s, to (1) determine the prevalence of COVID-19 in New York City, (2) evaluate the impact of COVID-19 on the overall health and well-being of children and families, and (3) assess the potential long-term effects of COVID-19 on children and families.

We will use a mixed-methods approach to study the effects of COVID-19 on children and families. This includes qualitative interviews with parents and children, as well as quantitative surveys to assess the impact of COVID-19 on family functioning, mental health, and academic performance. We will also conduct a longitudinal follow-up study to track the long-term effects of COVID-19 on children’s development.

We will conduct a comprehensive analysis of the data obtained from these studies to identify the key factors that contribute to the development of COVID-19 in children and families. We will then design and implement a set of preventive interventions that target these factors, such as improving access to resources and providing support for families in need. This study will provide valuable insights into the mechanisms underlying the effects of COVID-19 on children and families and inform the development of effective intervention strategies to mitigate these effects.
Black women experience disproportionately high rates of hypertension compared to women of other racial and ethnic groups, and their hypertensive BP control rates are well below target, despite high levels of awareness and treatment. Thus, an urgent need for effective, nonpharmacological strategies beyond lifestyle behavior change to improve hypertension and cardiovascular disease (CVD) outcomes in this underrepresented population. Chronic psychosocial stress is associated with hypertension and CVD. Black women are exposed to both race- and gender-based stressors and may employ coping strategies (e.g., emotion suppression, self-care postponement) that increase vulnerability to stress. While many stressful events and circumstances cannot be avoided, adaptive coping can mitigate adverse effects of stress exposure. Mindfulness-based cognitive therapy (MBCT) is an evidence-based program that teaches meditation practices and cognitive strategies to reduce perceived stress and negative emotions. Qualitative research supports the cultural relevance of mindfulness interventions for Black women but trial evidence in this population is limited. Further, the burdensome nature of traditional in-person MBCT poses a significant barrier to participation. We have adapted MBCT for delivery to small groups by telephone (MBCT-T). In this longitudinal cohort study designed to investigate the causes of CVD in Black women, 300 female JHS participants with uncontrolled hypertension will be enrolled and randomized to MBCT-T or telephone-based support groups (TSG), in an active comparator condition. Both groups will receive 8 1-hour training sessions, followed by monthly 30-minute booster calls for 6 months. Outcomes will be measured at baseline and 6 months with validated measures. Secondary outcomes are perceived stress and depressive symptoms. Measures of chronic stress, coping, resilience and potential psychological, social and behavioral mediators of intervention effects will be assessed. Data from the time prior JHS exams and 20 years of annual follow-up data will be used to characterize long-term levels of psychosocial factors that may help to explain variability in treatment response. The specific aims are to: (1) Test the hypothesis that MBCT-T will associate with greater 6-month reductions in systolic BP vs. TSG. (2) Test the hypothesis that MBCT-T will be associated with greater 6-month reductions in perceived stress and depressive symptoms vs. TSG and (3) Explore potential mediators and moderators of intervention effects on BP and secondary outcomes. Findings will advance understanding of stress, coping and effects of mindfulness training in Black women; if effective, this scalable psychosocial intervention has the potential to positively impact hypertension and other health outcomes among Black women in the JHS cohort and beyond.

In the first half of 2020, the SARS-CoV-2 (COVID-19) pandemic infected nearly 4 million persons in the U.S. and caused over 150,000 deaths. In the midst of the early phase of this pandemic, people with multiple chronic conditions (MCC) including diabetes, hypertension, obesity, and dyslipidemia, who are increasingly common with age, were left extremely vulnerable to disruptions in healthcare delivery. In New York City (NYC), the first U.S. epicenter of the COVID-19 outbreak, traditional ambulatory care ceased entirely for several months and was replaced with digital services. Implementation of telemedicine modalities and in-person care via bridge procedures was attempted but largely unsuccessful, and different phases may have interrupted essential health services. In this context, we embarked on an exploratory study to develop, implement, and evaluate a technology-facilitated team care (ALTA) framework, the proposed study will employ a mixed methods study design that links four data sources to rigorously evaluate the multilevel framework, the proposed study will employ a mixed methods study design that links four data sources to rigorously evaluate the multilevel

Download full text (PDF)
**Do no digital harm? A multi-level evaluation of technology-facilitated team care on the patient-provider relationship in health disparity populations**

**Purpose:**
- To evaluate the impact of technology-facilitated team care on the patient-provider relationship in health disparity populations.

**Methods:**
- The study will use a mixed-methods design, combining qualitative and quantitative approaches.
- Participants will be recruited from diverse communities and healthcare settings.

**Goals:**
- Improve patient satisfaction and trust in care delivery.
- Enhance the effectiveness of healthcare interventions for underserved populations.

**Expected Outcomes:**
- Identification of strategies to optimize technology-facilitated team care.
- Development of evidence-based guidelines for improving patient-provider relationships in health disparity settings.

**Significance:**
- Addressing health disparities is crucial for achieving health equity.
- Technology-facilitated team care has the potential to bridge gaps in healthcare access and improve outcomes for marginalized communities.

**Funding:**
- National Institutes of Health (NIH) grants R01HL165427 and R03AI149342.

**Contact:**
- Devin Mann, MD
- Internal Medicine
- 5/31/2028

---

**Using a Health Disparity Research Framework to examine mechanisms linking Obstructive Sleep Apnea with Higher Alzheimer’s disease risk in older Blacks/African-Americans**

**Focus:**
- Investigating the relationship between obstructive sleep apnea and Alzheimer’s disease in older African-Americans.

**Research Questions:**
- How do sleep disruptions due to obstructive sleep apnea contribute to the development or progression of Alzheimer’s disease?
- What are the potential biological pathways linking sleep apnea and cognitive decline in older adults?

**Methods:**
- Longitudinal cohort study with repeated assessments of sleep, cognitive function, and biomarkers over several years.
- Utilization of advanced imaging techniques (e.g., MRI, PET) to evaluate brain structures and functions.

**Expected Outcomes:**
- Identification of key biological mechanisms underlying the association between sleep apnea and Alzheimer’s disease.
- Development of early detection and intervention strategies for at-risk populations.

**Significance:**
- Understanding the complex interplay between sleep and Alzheimer’s disease is crucial for improving early diagnosis and intervention.
- Addressing sleep apnea in older African-Americans could lead to significant reductions in Alzheimer’s disease prevalence and burden.

**Funding:**
- National Institutes of Health (NIH) grants R01AG082278 and R01HS026522.

**Contact:**
- Bubu Omonigho, MD
- Psychiatry
- 7/21/2023

---

**Outcomes Framework (OIR) to evaluate the implementation of the RPM-enabled CHW for HTN management in older adults:**

**Objective:**
- To evaluate the effectiveness of a remote patient monitoring (RPM) program facilitated by community health workers (CHWs) in improving blood pressure control among older adults.

**Methods:**
- Mixed-methods approach combining quantitative and qualitative data collection.
- Use of the Outcomes Framework (OIR) to assess intervention implementation and effectiveness.

**Expected Outcomes:**
- Improved blood pressure control and patient satisfaction with RPM-enabled CHW services.
- Identification of barriers and facilitators to RPM implementation.

**Significance:**
- Addressing hypertension (HTN) in older adults is critical for preventing cardiovascular diseases and improving quality of life.
- Remote patient monitoring can enhance HTN management, especially in underserved populations.

**Funding:**
- National Institutes of Health (NIH) grants R01AG082278 and R01HS026522.

**Contact:**
- Devin Mann, MD
- Internal Medicine
- 6/28/2023

---

**Motivation Model of Behavior to evaluate the efficacy of a technology-based patient-reported outcome (PRO) system, the Modern Journal System, for management of T2D:**

**Objective:**
- To evaluate the efficacy of a technology-based PRO system (Modern Journal System) in improving glycemic control and self-management behaviors among patients with type 2 diabetes (T2D).

**Methods:**
- Prospective cohort study using a randomized controlled trial design.
- Utilization of a Motivation Model of Behavior to assess changes in patient behavior.

**Expected Outcomes:**
- Improved glycemic control and self-management behaviors among T2D patients.
- Identification of key factors influencing PRO system adoption and effectiveness.

**Significance:**
- Effective management of T2D is crucial for preventing long-term complications and improving patients’ quality of life.
- Technology-based PRO systems have the potential to enhance patient engagement and adherence to treatment plans.

**Funding:**
- National Institutes of Health (NIH) grants R01HL165427 and R03AI149342.

**Contact:**
- Bubu Omonigho, MD
- Psychiatry
- 5/19/2023

---

**Uncontrolled type 2 diabetes (T2D) is a major health problem in the US that contributes a significant cause of morbidity and mortality, particularly in vulnerable populations.**

**Background:**
- T2D affects millions of people worldwide and is characterized by chronic hyperglycemia and insulin resistance.
- Untreated or poorly managed T2D can lead to severe complications, including cardiovascular disease, kidney failure, and blindness.

**Aims:**
- To develop and implement a technology-based intervention for improved glycemic control and self-management among T2D patients.
- To evaluate the impact of this intervention on patient outcomes and healthcare costs.

**Methods:**
- The intervention will be based on visualizations of PRO data that can be shared through printed reports, and integrated into the electronic health record (EHR).
- Using a mixed-methods design, the intervention will be tested in two phases:
  1. A formative phase using the evidence-based user-centered design approach.
  2. A clinical efficacy phase using qualitative methods to adapt MJS DIABETES to the needs of PCPs and patients with T2D.

**Expected Outcomes:**
- Improved glycemic control and self-management behaviors among T2D patients.
- Reduced healthcare costs associated with long-term complications.

**Significance:**
- Addressing T2D in vulnerable populations is essential for reducing health disparities and improving overall public health.
- Technology-based interventions offer a promising approach for enhancing patient engagement and optimizing diabetes care.

**Funding:**
- National Institutes of Health (NIH) grants R01HL165427 and R03AI149342.

**Contact:**
- Bubu Omonigho, MD
- Psychiatry
- 1/31/2024
**PSYCHIATRY**

Omonih Bubu

Treatment of OSA in sleep-dependent memory and blood biomarkers in blacks

Growing evidence suggests that obstructive sleep apnea (OSA) patients have cognitive impairments as well as increases in Alzheimer’s disease (AD) risk. This is particularly concerning such subgroups as individuals who take sleeping medications and those with comorbid conditions like diabetes. There is an increasing concern about the risk of sleep-disordered breathing (SDB) in people with dementia, especially in those with mild traumatic brain injury (mTBI). This is because SDB is known to impair cognition and contribute to cognitive decline, which is a major contributor to AD risk. However, there is limited research on the long-term impact of SDB on cognitive outcomes in people with dementia, especially in those with mTBI.

We are interested in understanding how SDB interacts with AD risk in people with mTBI. Our goal is to identify the mechanisms underlying the relationship between SDB and AD risk in people with mTBI. We will conduct a longitudinal study to investigate the relationship between SDB and AD risk in people with mTBI. The study will include a group of mTBI patients with and without SDB and a control group of healthy individuals. We will measure cognitive function, AD biomarkers, and sleep quality in all groups. We will also use brain imaging techniques to assess the structural and functional changes associated with SDB and AD risk in people with mTBI.

This study will provide important insights into the relationship between SDB and AD risk in people with mTBI. The findings will have implications for the development of new therapies for AD and for the prevention of cognitive decline in people with mTBI.

---

**CLINICAL NEUROLOGY**

Suzan Waters

Population Health

**Cloud MR:** an Open-Source Software Framework to Democratize MRI Training and Research

Cloud MR is an open-source software framework designed to democratize MRI training and research. This project is a collaboration of our departmental Novel Research Tools for Brain Imaging, which is working to facilitate increased access to imaging facilities and data for researchers and clinicians.

Cloud MR is designed as an open-source, software framework that provides a standardized and flexible platform for MRI training and research. The framework allows users to train and test their own models using real-world imaging data and provides access to a wide range of research tools and resources.

Cloud MR is designed to be used by both experienced researchers and those new to the field. It provides a user-friendly interface for training and testing models, as well as a community of researchers who can share and collaborate on projects.

Cloud MR is being developed by a team of experts in the field of MRI training and research, including researchers, engineers, and technicians. The framework is being tested and validated with a variety of data sets and imaging protocols.

The goal of Cloud MR is to provide an open-source platform for MRI training and research that is accessible to everyone. By providing a virtual simulation environment to test new technology and optimize clinical protocols without operating an actual MRI scanner, Cloud MR will reduce the carbon footprint of MRI. The framework is also being developed to be used by medical practitioners, including those in less developed regions, to improve access to MRI training and research.

Cloud MR is currently being tested and validated with a variety of data sets and imaging protocols. The framework is designed to be scalable and adaptable, allowing it to be used for a wide range of applications.

---

**HIGH SCHOOL**

Yvonne Lui

**Reading and understanding scientific journals, plotting, pitch writing, making data visualizations for scientific dissemination, planning, and integrity**

This is a comprehensive course designed to introduce students to the skills needed to read and understand scientific journals, plot data, write pitches, and create data visualizations. The course will cover a range of topics, including data analysis, statistical thinking, and scientific writing.

The course will begin with an introduction to data analysis, including how to read and interpret scientific journals. Students will learn how to plot data and create visualizations that effectively communicate their findings.

In addition to these core topics, the course will also cover advanced topics such as statistical thinking and scientific writing. Students will learn how to think critically about scientific data and how to write clear and concise scientific papers.

The course will be taught by experienced educators who have a wealth of experience teaching these skills to students at all levels. Students will have the opportunity to work closely with their instructors to develop their skills and receive individualized feedback.

---

**HIGH SCHOOL**

R01NS119767

7/31/2025
<table>
<thead>
<tr>
<th>Role</th>
<th>Undergraduate, Post Baccalaureate Graduate, Graduate student</th>
</tr>
</thead>
<tbody>
<tr>
<td>Name</td>
<td>Jeannette Beasley</td>
</tr>
<tr>
<td>Title</td>
<td>INTERNAL MEDICINE/GERIATRIC MEDICINE</td>
</tr>
<tr>
<td>Project</td>
<td>Bringing the Diabetes Prevention Program to Geriatric Populations (BRIDGE)</td>
</tr>
</tbody>
</table>

Over 24 million Americans are ≥65 years and have prediabetes. Prediabetes can be addressed using a public health approach: among the 20% of participants in the Diabetes Prevention Program (DPP) who were ages 60 and over, the diet and physical activity intervention conferred a 71% risk reduction of diabetes after an average follow-up of 3 years. The population of older adults is projected to more than double from 52.5 million in 2019 to ~100 million by 2060, and if projections hold, about half (48.3%) will have prediabetes. The proposed study will compare a DPP program tailored for older adults and delivered via telehealth (DPP-TOAT arm) to an in-person DPP tailored for older adults (DPP arm) using a randomized, controlled trial design (n=230). Our preliminary data suggests DPP-TOAT is a feasible and acceptable way to deliver the DPP to older adults, and this will be the first study to compare the effectiveness and implementation of two strategies (telehealth versus in-person) to deliver a tailored DPP for the unique needs of the growing population of older adults. Eligible patients will be recruited through electronic health records (Epic and MyChart) and randomized to the 12-month DPP-TOAT or the in-person DPP program. The primary effectiveness outcome will be 6-month weight loss and implementation outcome will be attendance. We will use a pragmatic approach in order to inform future studies conducted in community-based and rural settings. Findings will inform best practices in the delivery of an evidence-based intervention that could reach the 24+ million adults aged 65 and over with prediabetes.