



2019/2020
ANNUAL REPORT

2 YEARS IN REVIEW



TEXAS TECH UNIVERSITY
HEALTH SCIENCES CENTER™

Garrison Institute on Aging



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Garrison Institute on Aging

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MISSION and VISION

Our mission is to promote healthy aging through cutting-edge research in aging-related health issues, such as Alzheimer's disease, and through innovative educational and community outreach programs. The Garrison Institute on Aging (GIA) is committed to addressing health issues of the aging population by investigating the causes of neurodegenerative diseases and educating the community on preventative medicine and challenges impacting the geriatric population.

Using cutting edge research methods and state of the art techniques, scientists at the GIA are actively working to identify novel targets and develop and test promising new drug compounds to improve healthy aging and to prevent and/or stop the progression of neurodegenerative and other aging-related diseases. In addition to research facilities for behavior, electrophysiology and molecular biology, the GIA houses biobanks for human brain tissue, bodily fluids, and DNA. Educational and outreach programs include the Translational Research Seminar Series, Healthy Aging Lecture Series, Caregiver Partner Academy, Retired Senior Volunteer Program (RSVP), Chronic Disease Self-Management Program and Healthy Lubbock.

Our vision is to serve as the central hub within Texas Tech University Health Sciences Center (TTUHSC) to stimulate and accomplish collaborative initiatives in research, education and community outreach related to healthy aging and aging-related disorders. Through a combination of GIA based programs and collaborative initiatives with colleagues across TTUHSC, the GIA seeks to provide a unique platform for the creation and application of new knowledge about healthy aging through research, interdisciplinary education and community outreach efforts.



Lori Rice-Spearman, Ph.D.

MESSAGE from PRESIDENT

We are living through a historical moment. A moment in which our world faces an unprecedented pandemic and its relentless impact on our aging population.

The Garrison Institute on Aging stands at the forefront in aging and neurodegenerative research. Through its work, we strive to better understand the aging process and its impact on the specific challenges of aging in the United States.

Under the leadership of Dr. Volker Neugebauer, our researchers pursue innovative and collaborative initiatives in the discovery of new therapeutic strategies to address the challenges of aging. Additional education and outreach efforts provides public support for aging healthy. Our greatest hope is to contribute work that prevents, delays, or slows age-related diseases.

Texas Tech University Health Science Center is infinitely grateful to the family of Shirley and Mildred Garrison and the many others who boldly place their faith in us and our abilities to advance healthy aging.



Volker Neugebauer
M.D., Ph.D.

MESSAGE from EXECUTIVE DIRECTOR

In 1999, TTUHSC leadership identified aging as a strategic priority for the 21st Century. The Board of Regents approved the establishment of the Institute for Healthy Aging which was renamed the Garrison Institute on Aging (GIA) in February 2005, in honor of Mildred and Shirley L. Garrison.

Our mission is to promote healthy aging through cutting-edge research in aging-related health issues, such as Alzheimer's disease (AD), and through innovative educational and community outreach programs. To do so, the GIA seeks to generate and disseminate knowledge about neurodegenerative disorders such as AD and about aging and aging-related health issues through its research, brain bank, and community outreach and education divisions. Our goal is to improve the health of the aging population by investigating the causes of neurodegenerative diseases and educating the community on preventative medicine and challenges impacting the geriatric population.

The GIA pursues preclinical research to determine mechanisms and therapeutic targets for AD and related dementias. GIA laboratories were restructured to include a new electrophysiology and behavioral facility with state-of-the-art equipment designed for the comprehensive study of brain functions and dysfunctions and behavioral consequences in AD and aging conditions. New concepts and strategies are currently being explored through research originating directly from GIA and through collaborative projects that were created through the new GIA Collaborative Seed Grant Program in Aging. Stimulating collaborative research on aging and aging-related disorders across TTUHSC is a new focus of GIA.

Preclinical research is complemented by Project FRONTIER (Facing Rural Obstacles to Healthcare Now Through Intervention, Education and Research), which also involves the GIA community outreach group to collect valuable epidemiological data on cognitive health and aging in a multiethnic adult sample from rural communities of West Texas. We implemented improvements in quality and utility and initiated several collaborative studies also involving students and residents, which are expected to stimulate new lines of mechanistic research. In the spring of 2020, our team added "Project FRONTIER Participant Assessment of COVID-19" to assess participants' perceptions and experiences related to COVID-19, including safety precautions and available and needed resources. The survey was recently expanded to Lubbock residents to allow for urban-rural comparisons.

The GIA Brain Bank continues to provide a valuable service to the families of patients with AD and other forms of dementias through free brain autopsies for a definitive diagnosis. The Brain Bank also offers important resources for research and education, serving the educational mission of GIA to inform students and trainees about AD and aging, and facilitating research by identifying factors that may predict onset and severity of AD and through the molecular analysis of brain tissues. A new searchable database is being developed in collaboration with TTUHSC Neurology to provide information to research collaborators about associations between medical conditions, medications, etc. and onset and severity of AD symptomatology and pathology. We have initiated steps to improve viability of Brain Bank tissue for molecular biological, biochemical and immunohistochemical analyses.

GIA Community Outreach strives to make a difference in the lives of people in Lubbock through education, awareness, surveys, self-management, volunteer and other programs on AD and aging-related health issues. The GIA community outreach component also contributes to research through Project FRONTIER and other activities. The GIA staff has implemented virtual education for older adults who are facing isolation and depression during the COVID-19 pandemic. Educational activities and learning opportunities will continue through Zoom, a platform for video and audio conferences and webinars. Our educational and outreach activities include the Retired and Senior Volunteer Program (RSVP), Healthy Aging Lecture Series, Healthy Lubbock Initiative, Care Partner Academy, Caregiver Conference, Chronic Pain in Aging Workshops, and events for National Alzheimer's Disease and Awareness Month.

This year GIA faced challenges related to the COVID-19 pandemic, which resulted in the cancellation of scheduled events such as the annual symposium on "Aging-Related Health Issues and Alzheimer's Disease" that would have featured key note speaker Dr. Eliezer Masliah, Director, Division of Neuroscience, NIH. The GIA team like all TTUHSC team members was affected by operational policies to limit campus presence and in-person meetings. Campus services were also disrupted and research activities were slowed down. However, the GIA team has adjusted smoothly and efficiently and continues to make progress to serve our mission and goal as a central hub within TTUHSC to stimulate and accomplish collaborative initiatives in research, education, and community outreach related to healthy aging and aging-related disorders.

Let me conclude with a big thank-you to all of our collaborators across departments and schools at TTUHSC and TTU, to the Laboratory Animal Resources Center (LARC) team, the Office of Research and Office of Sponsored Programs, the Office of External Relations, to the Provost and President, and the Dean of the School of Medicine for all their valuable support. A special thank-you goes to the Garrison Family for their continued dedication to the mission and vision of our Institute.

FACULTY | STAFF

RESEARCH DIVISION



Divya Burugu, M.S.
Research Scientist



Ruben Gonzales
Senior Director



J. Josh Lawrence, Ph.D.
Associate Professor,
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Neuroscience



Maria Manczak, Ph.D.
Research Assistant
Professor



Volker Neugebauer, M.D., Ph.D.
Executive Director and
Chief Scientific Officer,
Garrison Institute on
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Shirley L. Garrison Chair
in Aging, Professor and
Chair, Pharmacology
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Kandi Quesada, MPH
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Linda Yin, M.S.
Senior Research
Associate

COMMUNITY OUTREACH AND EDUCATION



Cordelia Aguirre
Coordinator,
Project FRONTIER



Clay Ament
Manager, RSVP



Gabriela Ashworth, Ph.D.
Research Assistant Professor, Pharmacology and Neuroscience, Manager, Grants and Publication



Joan Blackmon, MBA
Specialist IV, Community Care Partner Program



Annette Boles, M.S.
Director, Community Outreach and Education



Veronica Lopez
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Susan Thompson
Coordinator, Community Outreach and Education

RESEARCH COLLABORATORS

RESEARCH COLLABORATORS



Gail A. Cornwall, Ph.D.
Professor, Cell Biology and Biochemistry



Josee Guindon, DVM, Ph.D.
Assistant Professor, Pharmacology and Neuroscience
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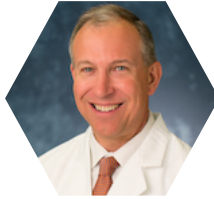


Kevin Pruitt, Ph.D.
Associate Professor, Immunology

CLINICAL COLLABORATORS



Alyce Ashcraft, Ph.D., RN, CNE, FNGNA, ANEF
Professor and Associate Dean for Research and Scholarship, University Distinguished Professor, Glenna Roberts Endowed Practicship in Nursing



John Culberson, M.D.
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John DeToledo, M.D.
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Duke Appiah, Ph.D.
Assistant Professor, Department of Public Health



Theresa Byrd, DrPH, MPH, R.N.
Chair, Department of Public Health, Associate Dean, Graduate School of Biomedical Sciences

PROJECT FRONTIER COLLABORATORS

COLLABORATIVE PRECLINICAL RESEARCH

Facilities, Projects, Scholarly Activities and Research Highlights

BASIC RESEARCH FACILITIES TO ENHANCE RESEARCH AND COLLABORATIONS

In 2019, GIA laboratories were restructured and upgraded with new equipment to create cutting-edge research facilities that would provide the basis for competitive grant applications and collaborations. A molecular facility was created by reorganizing and updating existing equipment to study molecular mechanisms of brain changes in AD and aging conditions. The new electrophysiology facility allows the analysis of neural networks in ex vivo brain tissues. The new behavioral facility with state-of-the-art equipment is designed for the comprehensive study of cognitive, affective, sensory, and motor aspects of behavior in AD and aging conditions.

Behavioral facility is managed by Linda Yin, and has equipment for motor deficit screening exploratory and anxiety related behavioral assessments, and associative, reference, procedural and working memory as well as behavioral flexibility testing. Most of our systems are Noldus based, and where relevant infrared backlit, employing an automated means for precise and accurate data collection. Standard operating protocols and training for use of equipment are available.

Molecular laboratory is managed by Maria Manczak, PhD, and has equipment for protein study, DNA and RNA analysis, immunohistochemistry, and cell culture.

Electrophysiology laboratory is managed by J. Josh Lawrence, PhD, and has equipment for brain slice physiology, including a Luigs and Neumann Infrapatch electrophysiology rig and a Scientifica electrophysiology rig. Both are equipped with Zeiss Axio Examiner upright microscopes and with components to integrate recording from fluorescent neurons and optogenetic stimulation. Additional equipment is for brain dissection, preparation of brain slices, and manufacturing recording electrodes. The close proximity of GIA's tissue culture facility allows neuronal cultures to be employed for electrophysiological experiments.

COLLABORATIVE RESEARCH PROJECTS

Trans-Synaptic Signal Complex in Alzheimer's Disease Models

(Principal Investigators – Volker Neugebauer, M.D., Ph.D., Maria Manczak, Ph.D.; Shashank David, Ph.D. at Creighton University)

Trans-synaptic protein complexes are necessary for cognitive function, and changes in the expression of these proteins may be involved with pathophysiology of Alzheimer's disease. Using AD mouse models, we are studying cognitive behavioral deficits and parallel changes in the expression of different molecules of a trans-synaptic signaling pathway. We are also testing expression and changes of our target molecules in control, early stage and later stage AD human brain tissues and in cerebrospinal fluid (CSF) samples from the TARCC project. This study may uncover a new amyloid β -protein ($A\beta$)-induced pathological mechanism in AD. Understanding the neurobiological basis for how $A\beta$ impairs synaptic plasticity could help develop more efficacious therapeutics for AD.

Reduced Mitochondrial Fission Protein DRP1 and Mitophagy in Alzheimer's Disease


(NIH R21 grant; Principal Investigator - Maria Manczak, Ph.D.)

The purpose of this study is to understand mitochondrial fission protein, Drp1 in mitophagy in Alzheimer's disease (AD), because mitochondrial dysfunction may affect mitophagy and play a pivotal role in AD pathogenesis and progression. We are breeding transgenic Tau mice and knockdown DRP1^{+/-} mice and we are also co-breeding Tau and DRP1^{+/-} mice to determine the role of reduction of mitochondrial fission DRP1 protein in preventing the progression of AD. We study quality and health of mitochondria by measuring mitochondrial biogenesis, dynamics, autophagy/mitophagy gene expression and protein level, and mitochondria structure and function. We will determine the effect of overexpression of DRP on autophagy to remove hyperphosphorylation tau, and on mitophagy to remove dysfunctional mitochondria.

Impact of Mitochondrial Fission Protein DRP1 on Autophagy/Mitophagy Pathway Under Tauopathy Conditions

(GIA collaborative seed grant; Principal Investigator - Maria Manczak, Ph.D.; Co-Investigator - Igor Ponomarev, Ph.D.)

This project will analyze autophagy/mitophagy pathways that are responsible for accumulation of phosphorylated



Tau and dysfunctional mitochondria in Tau-based Alzheimer's disease cell model (human neuroblastoma SH-SY5Y cells transfected with human mutant Tau cDNA clone). We will explore three different mitophagy pathways (Pink1 dependent, Parkin1-dependent, and Pink1/Parkin1-dependent). The first goal of this study is to explore which mitophagy pathways are responsible for eliminating the accumulation of phosphorylated Tau and damaged mitochondria, and maintain good mitochondrial functioning through a tight mitochondrial quality control in the AD cell model. The second aim of this project is to study the role of Drp1 (dynamin-related protein 1) in autophagy/mitophagy signaling function in the AD cell model and determine if reduction of Drp1 promotes induction of autophagy/mitophagy and clearance and degradation of pathological tau species.

Role of Mitochondrial Dysfunction in Changing Inflammatory Factors in Aging Mice Subjected to Chemotherapy-Induced Pain Sensitivity

(GIA collaborative seed grant; Principal Investigators - Josee Guindon, DVM, Ph.D.; Maria Manczak, Ph.D.; John Culberson, M.D.)

In this study we will determine if decrease and delay in chemotherapy-induced pain sensitivity (CIPS) in aging mice occurs through mitochondrial dysfunction. Mitochondrial dysfunction is one of the major hallmarks of aging. Dysfunctional mitochondria in aged mammals exhibit a diminished capacity for ATP production, increase reactive oxygen species (ROS) production, decreased membrane potential, loss the balance in mitochondrial fission and fusion cycles. This project will establish the role of mitochondrial dysfunction in the changes of ROS production contributing to changes in pronociceptive factors leading to age-dependent decrease and delay in pain.

Biopsychosocial Predictors of Cognitive Stability, Decline, and Resilience in a Sample of Older, Rural-dwelling West Texans: A Retrospective Cohort Study using Data from Project FRONTIER

(GIA collaborative seed grant; Principal Investigator - Gabriela Ashworth, Ph.D.; Co-Investigators – Duke Appiah, Ph.D., Annette Boles, M.S.)

This is serum-based Project FRONTIER cohort study exploring biopsychosocial risk factors on cognitive progression status: (1) cognitive stability, (2) cognitive resilience, and (3) cognitive decline. Results from this research are expected to provide insight into the development of diagnostic or therapeutic strategies for AD.

Impact of Alcohol on the Onset and Progression of Alzheimer's Disease and its Related Dementias

(Collaborative project; Principal Investigators - Igor Ponomarev, Ph.D.; John Lawrence, Ph.D.; Maria Manczak, Ph.D.)

This study will establish if alcohol has influence on susceptibility and progression of Alzheimer's disease and its related dementias. One of the hallmarks of AD is amyloid pathology and production of toxic A β peptides via proteolytic cleavages of amyloid precursor protein (APP) by the β - and γ -secretases. Levels of toxic A β peptides and health of mitochondria will be measured in control APP mice and alcohol-treated APP mice. Mitochondria are the main source of reactive oxygen species (ROS) in the AD brain and are one of the principal mediators for ethanol neurotoxicity. Ethanol exposure disrupts the mitochondrial membrane potential, increases ROS production, and finally induced apoptosis.

STUDENTS AND TRAINEES

- ◆ Dr. Ashworth's student project: Alexis Schuck – Medical Student Summer Research Program project exploring links between anxiety and depression with cognitive impairments among rural older West Texans, using data from Project FRONTIER
- ◆ Dr. Ashworth's student project: Dr. Eri Shoji - Nicotine addiction and cognitive functions among rural older West Texans, using data from Project FRONTIER
- ◆ Dr. Lawrence's student project: Mohammad A. Pourghad (TTUHSC MS2 Student) - Vitamin D as a Modifiable Risk Factor in Depression and Alzheimer's Disease: Insights into Health Disparity Populations, using data from Project FRONTIER

OTHER RESEARCH PROJECTS

- ◆ Drs. Neugebauer and Ji (Pharmacology and Neuroscience), and Dravid (Creighton University), Trans-Synaptic Signaling Complex in Amygdala Pain Mechanisms (NIH/NINDS, R01 NS118731)
- ◆ Drs. Neugebauer and Ji (Pharmacology and Neuroscience), and Drs. Navratilova and Porreca (Univ. of Arizona), Pronociceptive and antinociceptive opioid mechanisms in the central nucleus of the Amygdala (NIH/NINDS, R01 NS109255)
- ◆ Drs. Neugebauer and Ji (Pharmacology and Neuroscience), and Drs. Navratilova and Porreca (Univ. of Arizona), Stress-induced descending facilitation from amygdala kappa opioid receptors in functional pain (NIH/NINDS, R01 NS106902)
- ◆ Dr. Neugebauer, Amygdala Pain Mechanisms (NIH/NINDS, R01 NS038261)
- ◆ Drs. Neugebauer and Ponomarev (Pharmacology and Neuroscience), The neuroimmune model of excessive alcohol consumption: Transition to Alcohol Use Disorder (NIH/NIAAA, R01 AA027096)
- ◆ Drs. Neugebauer and Shen (Pathology), Tai Chi for Pain Management: A Pilot Mechanistic Study (Center of Excellence for Translational Neurosciences and Therapeutics, TTUHSC, PN-CTNT 2018-12 LSVNBAW)
- ◆ Drs. Lawrence and Bergeson (Cell Biology and Biochemistry) - Neuroinflammation and AD
- ◆ Drs. Neugebauer, Ji, Manczak, Avila (Neurology), German (Pharmacy, Amarillo) - Novel drug for the treatment of neurodegenerative and neuroinflammatory changes in multiple sclerosis.
- ◆ Drs. Neugebauer, Ji, Manczak, Ponomarev (Pharmacology and Neuroscience) - Neuroinflammatory changes and transcriptomic discovery of novel targets for neuropathic pain.

GRANT APPLICATIONS

- ◆ Dr. Lawrence, The hippocampal dentate gyrus in aging and Alzheimer's disease: relating antioxidant depletion to cognitive decline (NIH/NIA R01), 2020
- ◆ Dr. Lawrence, The hippocampal dentate gyrus in aging and Alzheimer's disease: Focus on oxidative stress and mitochondria (NIH/NIA P01 subproject), 2020
- ◆ Dr. Lawrence, Regulation of hippocampal neuron excitability and function by cholinergic action on multiple ion channels (NIH/NINDS R01), 2020
- ◆ Drs. Lawrence and Ponomarev, Retinoic Acid Signaling in Dentate Gyrus Inhibitory Microcircuits: Protection Against Alzheimer's Disease Pathogenesis (NIH/NIA R01), 2020
- ◆ Drs. Lawrence and Ponomarev, SLC13A5-Associated Epilepsy: Mechanistic Insights into GABAergic and Metabolic Dysfunction (NIH/NINDS R01), 2020
- ◆ Drs. Neugebauer and Porreca (Univ. of Arizona), A prolactin-mediated neuroendocrine link between stress-induced latent sensitization and female-selective pain (NIH/NINDS R01), 2020
- ◆ Drs. Neugebauer and Shen (Pathology), Clinical Investigation of Tai Chi and n-3 PUFA on endocannabinoid modulation and brain fMRI connectivity in knee OA pain (NIH R01), 2020
- ◆ Drs. Neugebauer and Burman (Univ. of New England), The Role of Amygdalar Corticotropin Releasing Factor in the Lasting Effects of Neonatal Pain (NIH/NINDS R01), 2020
- ◆ Drs. Neugebauer and Porreca (Univ. of Arizona), Central circuits of migraine pain (NIH/NINDS R01), 2020
- ◆ Drs. Neugebauer and Dravid (Creighton University), Trans-synaptic signaling complex in amygdala pain mechanisms (NIH/NINDS R01), 2019
- ◆ Drs. Neugebauer and Shen (Pathology), Tai Chi and n-3 fatty acids increase endocannabinoids and neuroplasticity to improve knee osteoarthritis (NIH R21), 2019
- ◆ Dr. Lawrence - Inhibitory Circuit Alterations Impacting Hippocampal Processing in Alzheimer's Disease Mouse Models: Role of Retinoic Acid in Protection (NIH/NIA R01) 2019

PUBLICATIONS

- ◆ Protocol article on Project FRONTIER is in preparation (Dr. Ashworth, Boles, Lopez, Dr. Neugebauer)
- ◆ Review article on pain and aging is in preparation (Drs. Ashworth and Neugebauer; Dr. Burton at UT Dallas)
- ◆ Review article on trans-synaptic signaling complexes is in preparation (Burugu, Yin, Dr. Manczak, Dr. Neugebauer)

- ◆ Neugebauer, V. Serotonin - Pain Modulation. In: Mueller, C.P., Cunningham, K.A. (Eds.) Handbook of the Behavioral Neurobiology of Serotonin, 2nd Edition, Handbook of Behavioral Neurosciences, 31: 309-320, 2020
- ◆ Neugebauer, V. Amygdala Physiology in Pain. In: Rosenkranz, J.A., Urban, J.H. (Eds.) Handbook of Amygdala Structure and Function, Handbook of Behavioral Neurosciences, 26: 101-113, 2020
- ◆ Ji, G. and Neugebauer, V. Kappa opioid receptors in the central amygdala modulate spinal nociceptive processing through an action on amygdala CRF neurons. *Mol. Brain* 13: 128 (10 pp), 2020
- ◆ Mazzitelli, M., Neugebauer, V. Amygdala group II mGluRs mediate the antinociceptive effects of a systemic group II agonist in a rodent model of arthritis pain. *Neuropharmacology* 158:107706 (11 pp), 2019
- ◆ Ji, G. and Neugebauer, V. Contribution of CRF1 receptor to 5-HT2C receptor function in amygdala neurons in a neuropathic pain model. *Int. J. Mol. Sci.* 20:4380 (18 pp), 2019
- ◆ Thompson, J.M., Neugebauer, V. Cortico-limbic pain mechanisms. *Neurosci. Lett.* 702:15-23, 2019
- ◆ Navratilova, E., Nation, K., Remeniuk, B., Neugebauer, V., Bannister, K., Dickenson, A.H., Porreca, F. Selective modulation of tonic aversive qualities of neuropathic pain by morphine in the right central nucleus of the amygdala requires endogenous opioid signaling in the anterior cingulate cortex. *Pain*: 161:609-618, 2020
- ◆ Chen, Y., Moutal, A., Navratilova, E., Kopruszinski, C., Yue, X., Ikegami, M., Chow, M., Kanazawa, I., Bellampalli, S.S., Xie, J., Patwardhan, A., Rice, K., Fields, H., Akopian, A., Neugebauer, V., Dodick, D., Khanna, R., Porreca, F. The prolactin receptor long isoform regulates nociceptor sensitization and opioid-induced hyperalgesia selectively in females. *Sci Translat Med* 12:529
- ◆ Neugebauer, V., Mazzitelli, M., Cragg, B., Ji, G., Navratilova, E., Porreca, F. Amygdala, neuropeptides, and chronic pain-related affective behaviors. *Neuropharmacology* 170: 108052 (13 pp), 2020
- ◆ Ji, G. and Neugebauer, V. Kappa opioid receptors in the central amygdala modulate spinal nociceptive processing through an action on amygdala CRF neurons. *Mol. Brain* 13: 128 (19 pp), 2020
- ◆ Sekulić, V., Yi, F., Garrett, T., Guet-McCreight, A., Lawrence, J.J., Skinner, F.K. Integration of Within-Cell Experimental Data With Multi-Compartmental Modeling Predicts H-Channel Densities and Distributions in Hippocampal OLM Cells. *Front Cell Neurosci* 14:277, 2020
- ◆ Reddy, P. H., Swerdlow, R. H., Culberson, J., Kang, D., Mitchell, T. L., Smith, Q.,.... Lawrence, J.J....& Morsy, A. (2019). Current Status of Healthy Aging and Dementia Research: A Symposium Summary. *Journal of Alzheimer's Disease*, 72(s1), S11-S35
- ◆ Sekulić, V., Yi, F., Garrett, T., Guet-McCreight, A., Lopez, Y. Y., Solis-Wheeler, M.,.... Lawrence, J.J. & Skinner, F. K. (2019). Somatodendritic HCN channels in hippocampal OLM cells revealed by a convergence of computational models and experiments. *BioRxiv*, 633941
- ◆ Maksymetz, J., Joffe, M. E., Moran, S. P., Stansley, B. J., Li, B., Temple, K.,.... Lawrence, J.J. ...& Conn, P. J. (2019). M1 muscarinic receptors modulate fear-related inputs to the prefrontal cortex: Implications for novel treatments of posttraumatic stress disorder. *Biological psychiatry*, 85(12), 989-1000
- ◆ Lubbock AJ Health Column, The Fight Continues Against Alzheimer's Disease (Dr. Ashworth)
- ◆ TTUHSC Office of Communication, Suzanna Cisneros: Innovations in Aging Award (GIA)
- ◆ "Garrison Institute on Aging to Present National Alzheimer's Disease and Awareness Month". In: TTUHSC Statline Daily Dose, by Suzanna Cisneros, November 6, 2019

MEETINGS ATTENDED BY GIA RESEARCHERS



- ◆ National Institute of Physiological Sciences International Workshop on Frontiers in Defensive Survival Circuit Research - Pain and Survival Strategy | Okazaki Japan | January 2020 | Dr. Neugebauer presented research
- ◆ Second Galveston Symposium on Alzheimer's Disease and Related Disorders: Basic, Translation and Clinical Updates | UTMB Galveston | June 26, 2019 | Drs. Neugebauer, Lawrence, Ashworth, and Manczak attended the meeting
- ◆ Annual Scientific Meeting | Society for Neuroscience | Chicago | October 19, 2019 | Drs. Neugebauer and Lawrence presented their research findings
- ◆ Annual Scientific Meeting | Gerontological Society of America | Austin | November 13, 2019 | Dr. Ashworth presented findings from the Project FRONTIER study

HIGHLIGHTS

- ◆ Created GIA membership categories for: Research Collaborators (Drs. Cornwall, Guindon, Karamyshev, Ponomarev, Pruitt); Clinical Collaborators (Drs. Ashcraft, Culberson, DeToledo, Julayanont); and Project FRONTIER Collaborators (Drs. Appiah and Byrd)
- ◆ Bi-weekly research club meetings presenters included Drs Josee Guindon, Maria Manczak, Gail Cornwall, Alyce Ashcraft, Gabriela Ashworth, and Kevin Pruitt
- ◆ Dr. Ashworth joined the Department of Pharmacology and Neuroscience as Research Assistant Professor on September 1, 2019
- ◆ Organized research retreat jointly with the Department of Pharmacology and Neuroscience in Austin, TX in 2019. Presentations by Drs. Ashworth, Lawrence, Manczak, and Neugebauer were given
- ◆ The new Collaborative Seed Grant Program in Aging was made possible by the generous support of Dr. Steven Berk, Dean, School of Medicine, and Executive Vice President for Clinical Affairs. More than ten strong applications were received and evaluated initially by a committee of GIA members. Each application was then assigned to two expert reviewers not affiliated with GIA. Based on the assessments by the reviewers and GIA, seven applications were selected for funding. The successful applications include three proposals for studies in human subjects and four basic science research projects. The collaborative teams of basic scientists, clinicians, public health and community outreach specialists are based in nine departments of four TTUHSC schools (School of Medicine, Cell Biology and Biochemistry, Family and Community Medicine, Immunology and Molecular Microbiology, Internal Medicine, Neurology, Pharmacology and Neuroscience; Graduate School of Biomedical Sciences, Public Health; School of Nursing; and School of Health Professions) and the Garrison Institute on Aging. Project details are listed below:
 - ◇ “Mind your heart: the association of heart/vascular aging with mild cognitive impairment using data from Project FRONTIER.” Principal Investigators: Duke Appiah, GSBS, and Gabriela Ashworth, SOM, GIA; Co-Investigator: Nandini Nair, SOM, and Annette Boles, GIA
 - ◇ “Biopsychosocial predictors of cognitive stability, decline, and resilience in a sample of older, rural-dwelling West Texans: a retrospective cohort study using data from Project FRONTIER.” Principal Investigator: Gabriela Ashworth, SOM, GIA; Co-Investigators: Duke Appiah, GSBS, and Annette Boles, GIA
 - ◇ “Alzheimer’s disease and urinary tract infection: nursing home workflow encompassing CNA, LVN, and PCP communication.” Principal Investigators: Alyce Ashcraft, SON, Donna Owen, SON, and John Culberson, SOM
 - ◇ “Impact of mitochondrial fission protein DRP1 on autophagy/mitophagy pathway under tauopathies conditions.” Principal Investigator: Maria Manczak, GIA, SOM; Co-Investigator, Igor Ponomarev, SOM, GSBS.
 - ◇ “Host defense amyloids in the brain.” Principal Investigator: Gail Cornwall, SOM; Co-Investigator: Hemachandra Reddy, SOM, GSBS, SHP
 - ◇ “Role of aberrant Wnt/Ca2+ signaling in Alzheimer’s disease and cancer.” Principal Investigators: Kevin Pruitt, SOM, GSBS, and Josh Lawrence, GSBS, GIA, SOM
 - ◇ “Role of mitochondrial dysfunction in changing inflammatory factors in aging mice subjected to chemotherapy-induced pain sensitivity.” Principal Investigator: Josee Guindon, SOM, GSBS; Co-Investigators, Maria Manczak, SOM, GIA, and John Culberson, SOM

COLLABORATIVE COMMUNITY-BASED PARTICIPATORY RESEARCH

The GIA serves as an integrative platform for basic research, human studies, and community outreach and education for healthy aging at the TTUHSC (website: <https://www.ttuhs.edu/centers-institutes/garrison-aging/default.aspx>). Both a laboratory- and community-based research study, Project FRONTIER (Facing Rural Obstacles to Healthcare Now Through Intervention, Education & Research) originally began as a pilot project called the Cochran County Aging Study. The pilot study was designed to investigate the prevalence of dementia among rural Cochran County residents. Researchers gathered preliminary data in Cochran County



with the goal of creating a large rural cohort of elderly individuals to study biological, cultural and environmental risk factors of dementia over time. Data collected would provide insight into the development and progression of dementia. In 2009, three more surrounding counties were added to the study area and Project FRONTIER was born. Project FRONTIER explores cognitive aging/decline and associated risk factors longitudinally among a multi-ethnic sample of adults in rural West Texas (webpage: <https://www.ttuhs.edu/centers-institutes/garrison-aging/project-frontier.aspx>). The project enrolls residents, aged 40 and over, living in Cochran, Parmer, Hockley, and Bailey counties. Participants are followed every 3 years and complete an in-depth interview (survey), medical examination by a health care provider, neuropsychological and functional tests, and blood work. An informant interview with a close family member or friend who can speak on a participant's cognition and functional abilities is also conducted. Project FRONTIER Coordinators are committed, trained, and have established trust and support with community members. Project FRONTIER has been approved by the TTUHSC Institutional Review Board. Drs. Volker Neugebauer and Gabriela Ashworth serve as Principal Investigators on the project.

To date, Project FRONTIER has enrolled 1321 participants (1st visits n=1287; 2nd visits n=448; 3rd visits n=100; 4th visits n=22). The Qualtrics database and hard copies of specific tests are maintained at the GIA. The data are being analyzed by researchers across TTUHSC, TTU, and other institutions. Recent collaboration includes Drs. Byrd, Appiah, Lawrence, Karamyshev, and Curkowitz. Thus far, collaborations have resulted in over 70 publications in peer-reviewed journals and presentations at national, regional, and university scientific meetings. Currently, several Project FRONTIER projects, funded by the GIA Collaborative Seed Grant Program in Aging, are ongoing and are expected to lead to federally funded grant applications.

COMMUNITY BASED RESEARCH PROJECTS

Conducting the “South Plains Caregivers Survey” with Local Caregivers

Principal Investigator: Gabriela Ashworth, Ph.D.

Development of the South Plains Caregivers Survey will help us learn about the caregivers in our community as well as their perceptions on resources and services that are available and needed locally. Results will highlight needs that we can put forth in grant proposals and help to inform our programmatic efforts. Survey participants were recruited from our Care Partner Academy, other local caregiver support groups, as well as the annual South Plains Association of Governments and TTUHSC GIA Caregiver Conference last year. As of June 2020, a total of 77 respondents have completed the South Plains Caregivers Survey. Data analyses of the full dataset have been conducted and results will be published in a peer review journal, and subsequently shared with our local community partners and public.

“Project FRONTIER Participant Assessment of COVID-19”

Principal Investigator: Volker Neugebauer, M.D., Ph.D.; Gabriela Ashworth, Ph.D.

Research Team: Annette Boles, M.S.; Veronica Lopez; Susan Thompson; Cordelia Aguirre

The pandemic of COVID-19 (coronavirus) has had far-reaching disastrous effects in terms of death and disease. The pandemic first hit urban city centers as a result of international and domestic travel and crowding. Rural areas are now facing the same perils. Currently, there is no prior assessment being conducted in rural West Texas communities focused on COVID-19. This research is important for understanding residents' experiences during this time and informing public health and health care leaders in leading preparedness efforts in these areas. The aims of this study are to: 1) learn how rural residents in West Texas are experiencing COVID-19. 2) understand what preventive measures (during the COVID-19 pandemic) are been taken by residents. 3) assess perceptions about resources and services (i.e., telehealth) that are available in rural communities. To achieve these aims, research staff at the Garrison Institute on Aging are administering a one-time telephone survey to persons who agreed to be re-contacted for future research in the Project FRONTIER Study. As of June 2020, a total of 64 respondents have completed the survey. Respondents live across the 4-county study area of Project FRONTIER: Bailey County, Cochran County, Hockley County, and Parmer County. Data collection is ongoing; and data analyses and reporting will be conducted. Preliminary findings will serve as the basis for a grant proposal on COVID-related community-based interventions in rural West Texas. Results will be published in a peer reviewed journal and shared with the public. Moving forward (as of August 2020), the project will be expanded to include Lubbock County residents for an urban-rural comparison of residents' experiences with COVID-19.



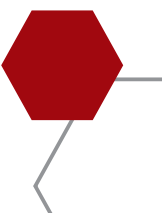
GIA BRAIN BANK

The GIA Brain Bank serves the mission of the GIA through research and education. The Brain Bank continues to provide valuable service to the families of patients with Alzheimer's disease (AD) and related dementias by providing them diagnosis of their loved ones. The Brain Bank facilitates research by identifying factors that may predict onset and severity of AD and through the molecular and immunohistochemical analysis of brain tissues. It also serves to educate and inspire high school students from local and surrounding communities to pursue careers in research.



Several improvements of Brain Bank resources for research have been initiated. We have been working towards creating a searchable database by entering information from patient files (paper) into tables using software programs (electronic) in collaboration with a TTUHSC Neurology Faculty (Dr. Julayanont). Associations between medical conditions, medications, etc. and onset and severity of AD (information about brain pathology is determined by a pathologist for the Brain Bank) could be discovered and provide the scientific premise for mechanistic preclinical research. We are also exploring opportunities to increase the viability of the fresh-frozen and fixated brain tissue a) by collaborating with the Institute of Anatomical Sciences at TTUHSC to reduce the harvesting time frame and getting precise sections of tissue from brain regions for fresh-frozen tissue storage and analysis, and b) by expanding the number of fixated tissue samples available for immunohistochemical analysis. While initiating steps to improve viability of Brain Bank tissue, we have successfully obtained brain tissues from patients with AD and age-matched control subjects from brain banks at NIH and the University of Kentucky for biochemical and immunohistochemical analyses. We also tested some of our Brain Bank brains immunohistochemically for comparison.

The GIA Brain Bank is an integral part of the Red Bag Tours for High School Students (monthly from January-May), the TTUHSC Science Camp in the summer, and TTU Honors College - American Medical Student Association in the fall. The GIA Brain Bank staff members provide a tour of the Brain Bank and provide in-depth education about the process of collecting brain tissue. During the months of January through May (FY 2019 and 2020), the GIA has educated nearly 1,200 high school students and local community members via Red Bag Tours. The GIA staff also conducts tours and educational sessions for local community agencies, such as the Lubbock Chamber of Commerce. In 2019, the Leadership Lubbock, a class of local adult leaders learning about community initiatives, participated in a Brain Bank tour.



EDUCATION

Research Presentations, Educational Sessions, Lecture Series (see also Brain Bank)

RESEARCH EDUCATION

GIA has implemented biweekly research club meetings and holds joint seminars with the Translational Neuroscience and Pharmacology seminar series to emphasize aging-related research and education.



Shashank Dravid, Ph.D.
Creighton University



Michael Burton, Ph.D.
*University of Texas
at Dallas*



Celeste Napier, Ph.D.
Rush Medical College



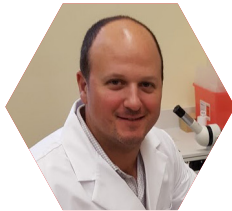
Sudha Seshadri, M.D.
*University of Texas
at San Antonio*



Guilio Tagliatela, Ph.D.
*University of Texas
Medical Branch*



Parunyou Julayanont, M.D.
*Texas Tech University
Health Sciences Center*



Patrick Sheets, Ph.D.
Indiana University

DIABETES SELF-MANAGEMENT PROGRAM

GIA staff members launched a 6-week Diabetes Self-Management Workshop, October 1, 2019, at Our Lady of Grace Church. The Diabetes Self-Management Workshop, endorsed by the Centers for Disease Control and Prevention, teaches adults strategies to empower and improve overall well-being. The workshops are led by Veronica Molinar-Lopez and Susan Thompson, certified Diabetes Self-Management leaders.

HEALTHY AGING LECTURE SERIES

The Healthy Aging Lectures Series is a monthly educational program for the public to learn more about innovative research and health topics of interest to seniors. In 2019 and 2020, the following lectures were hosted at the Carillon Senior Living Center.



Martin Binks, Ph.D.
*Texas Tech University
Nutritional Sciences*
**Managing Stress for a
Healthier Lifestyle**



Allison Childress, Ph.D.
*Texas Tech University
Nutritional Sciences*
**How Nutrition Impacts
Strength and Energy, and
Preventing Portion Distortion**



Shannon Galyean, Ph.D.
 Texas Tech University
 Nutritional Sciences
**Food for Memory Power, Bone
 Strength & Heart Health**



Gabriela Ashworth, Ph.D.
 Texas Tech University Health
 Sciences Center Garrison
 Institute on Aging
**Alzheimer's Disease & Other
 Dementias, Reducing Your
 Risks by Keeping Your
 Brain Active and Healthy**



Denise Owens, CFE
 Plains Capital Bank
Don't Become a Target



Sherman Hope, M.D.
 Retired Physician
The Living Will



Patti Kissko, P.T.
 University Medical Center
**Fall Prevention from Head to
 Toe and to the Moon and Back**



Parunyou Julayanont, M.D.
 Texas Tech University Health
 Sciences Center Neurology
 Department
**Early Symptoms of Alzheimer's
 Disease and Non-Alzheimer's
 Dementias**

Shuvo Alam, M.A., Pharm. D.
 Sam's Club Pharmacy
**Opioid Misuse and
 Prevention in Older Adults**

COMMUNITY OUTREACH

New Initiatives, Continued Programs with Expanded Reach, Community-Based Meetings and Awards

NEW COMMUNITY-BASED INITIATIVES

The GIA Community Outreach and Education staff collaborated with the Texas Department of State Health and Human Services to host the Opioid Misuse Prevention in Older Adults Symposium on February 26, 2020. There were 54 attendees. Thomas F. McGovern, Ph.D., TTUHSC, spoke about "Pain Management in the Care of the Elderly: Ethical Dimensions." Jason C. Helton, Ph.D., Helton Chiropractic, discussed "Improving Pain Management." Debbie Carter, HHSC, presented "More Narcan Please." Shuvo Alam, Pharm. D., spoke on "Opioid Management in the Age of the Opioid Epidemic." We will continue to seek other important collaborations with the State Health Department.

Another new initiative is the development of *Dementia Friendly Lubbock*. In the spring of 2020, the GIA staff worked diligently with Mayor Dan Pope and local stakeholders to begin formulating a plan to classify Lubbock as a Dementia Friendly Community and join the hundreds of other communities across Dementia Friendly America. *Dementia Friendly Lubbock* will raise awareness of dementia and develop respect and inclusion for people with dementia, provide services and resources embedded in all areas of community to promote quality of life, support and educate people with dementia, their caregivers and families, from diagnosis through disease progression. Program implementation and future collaborations were halted in March due to the COVID-19 pandemic; however, the goal is to resume planning and implementation in early 2021.

POTENTIAL PLANS OF DEMENTIA FRIENDLY LUBBOCK:

- To educate businesses and banking support customers with how to recognize and accommodate individuals that have cognitive impairment.
- To train law enforcement and first responders to recognize signs of dementia and respond accordingly.
- To educate faith communities about welcoming and conducting specialized programs, services or accommodations.
- To meet with local governments to plan and implement housing, transportation, public spaces, and emergency response that enable people with dementia and caregivers to thrive.
- To educate community members about how to interact sensitively and create networks of support.
- To meet with restaurants, grocery stores, and libraries to offer services and support that foster access and independence.
- To work closely with employers and provide information about how to support employees who are caregivers through proactive personnel policies.



CARE PARTNER ACADEMY

Lubbock’s Care Partner Program, “Lights on In Lubbock,” is designed to assist care partners manage their own health while caring for loved ones affected by dementia and other chronic diseases. The program provides evidence-based information and support group sessions. Topics of discussion include disease management, personal care management, behavioral issues, and care partner self-care. Group sessions began in 2019 and are held twice monthly for attendees. We are delighted to have the continued support of the Newby Family, Dr. John Culberson, TTUHSC Family Medicine and Geriatrics, his fellow doctors, and medical students.

TOPICS INCLUDED BUT NOT LIMITED TO:

Understanding Alzheimer’s disease	Communicating with health care professionals
Dealing with care partner stress	Dealing with emotions
Managing difficult behaviors	Long term care
Making difficult decisions	EMS-services provided and when to call
Quality of life	Medicare and Medicaid
Role reversals	Nutrition and exercise as we age
Legal decisions, planning for the end	Emergency registrations
Communicating with family	Veteran resources

We have partnered with various groups, including the Alzheimer’s Association during National Alzheimer’s Disease Awareness Month in November 2019, Better Breathers, and Southwest Parkinson’s Society’s support group to expand our reach and resources. We co-hosted the 2019 Annual Caregiver’s Conference with the Area Agency on Aging. At the conference, Teepa Snow was the keynote speaker to an audience of over 200 attendees and 35 supporting vendors. Her presentation focused on innovative approaches to help caregivers enhance their awareness and knowledge of care strategies to better care for a loved one living with dementia. Through our GIA initiatives focused on caregivers, we aim to give caregivers a voice and equip them with the tools and resources they need to care for themselves as they care for a loved one.

2019 NATIONAL ALZHEIMER’S DISEASE AWARENESS MONTH

In 1983, U.S. President Ronald Reagan declared November as National Alzheimer’s Disease Awareness Month to foster awareness and inspire action against Alzheimer’s disease, the most common cause of dementia among older adults. According to the Alzheimer’s Association 2019 Alzheimer’s Disease Facts and Figures report, an estimated 5.8 million Americans are living with Alzheimer’s disease; and by 2050, this number is projected to rise to nearly 14 million Americans. Alzheimer’s disease is the sixth leading cause of death in the U.S., and the fifth leading cause of death among individuals aged 65 and older. In November, the GIA commemorated National Alzheimer’s Disease Awareness Month by raising awareness and educating the public on Alzheimer’s disease. Activities are highlighted below:

- ◆ **National Alzheimer’s Disease Awareness Month Lectures About Alzheimer’s Disease:**
 - ◇ 11-04: Care Partner Academy Topic: 10 Warning Signs of Dementia, Joe B Duke, M.Ed, UPC, NCC
 - ◇ 11-06: Distinguished Lecture Series: A Personalized, Precision Medicine Approach to the Prevention, Diagnosis and Management of Dementia, Dr. Sudha Seshadri, UT San Antonio
 - ◇ 11-13: Healthy Aging Lecture Series: Early Symptoms of Alzheimer’s Disease and Non-Alzheimer’s Dementia’s, Parunyou Jaulayanont, M.D., TTUHSC
 - ◇ 11-14: Care Partner Academy: Legal and Financial Planning for Alzheimer’s Disease, Lee Franks Elder Law Attorney, Franks & Pleasant, LLP
 - ◇ 11-21: Distinguished Lecture Series: Alzheimer’s Disease, n=1: A Clinical Dilemma, John Culberson, MD; TTUHSC
- ◆ **Dementia Simulation for community members at Carillon Senior Living Center**
- ◆ **Public relations and promotional opportunities to educate the community:**
 - ◇ KCBD’s Health Wise with Karin McCay on Nov. 7, with guest Dr. Gabriela Ashworth.
www.kcbd.com/2019/11/08/ttuhsc-supports-november-awareness-alzheimers/
 - ◇ Lubbock AJ Health Column, TTUHSC Garrison Institute on Aging: November is National Alzheimer’s Awareness Month by Dr. Gabriela Ashworth.
www.lubbockonline.com/news/20191104/tech-doc-fight-continues-against-alzheimers-disease

LUBBOCK RSVP COMMUNITY IMPACT REPORT

Total Volunteers as of June 19, 2020	744
New Volunteers since August 1, 2019	38
Approximate # of hours since August 2019	46,000
Lap Quilts made by volunteers	57
Toboggan and Beanies made by volunteers	261
Face Coverings made by volunteers	510

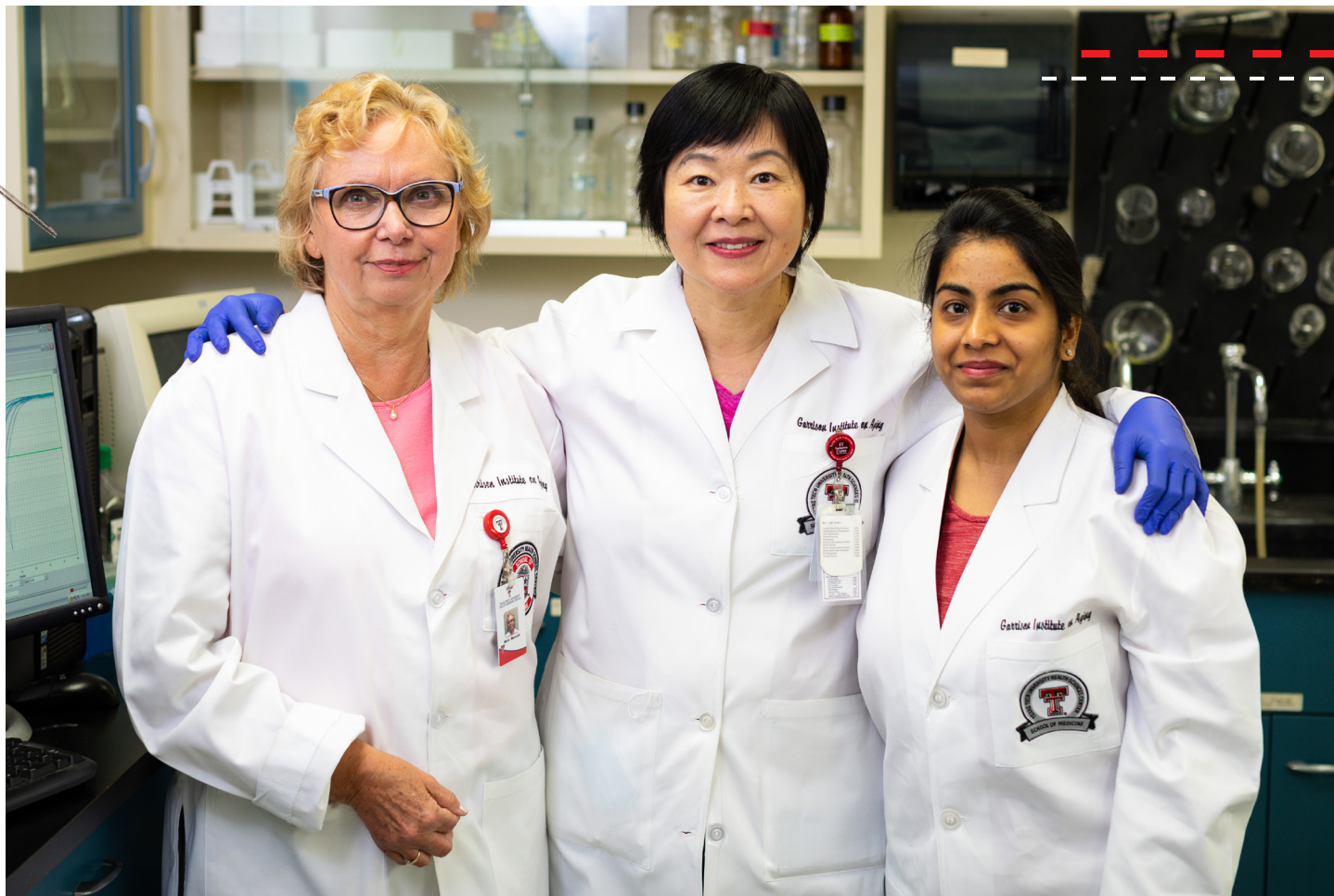


Over 400 Home Meal Delivery Surveys have been collected from Lubbock Meals on Wheels to show the impact RSVP volunteers have had.

Obtained augmentation award for Retired and Senior Volunteer Program (\$7,500) (Ament, Boles)

Annual Recognition Event held on Nov. 7, 2019. 115 attended the event, with six volunteers reaching their 4,000-hour mark with the program.

To address the shortage of face coverings during the COVID-19 pandemic, RSVP volunteers have sewn face coverings for health care workers and community members.



RSVP PROGRAM HIGHLIGHT:

Due to COVID-19, the recommendations from the Centers for Disease Control (CDC) and the mask requirements in public facilities, RSVP manager, Clay Ament, developed a new program called Project Protect Lubbock (PPL). PPL provides face coverings to protect our Lubbock community. Mr. Ament reached out to the RSVP members about making face coverings. Initially, eight volunteers agreed to make face coverings, and within four months over 600 face coverings were made. After the face coverings are made, they are taken to the TTUHSC Team Decon. Team Decon decontaminates the masks using a Bioquell system designed to use vaporous hydrogen peroxide. This specific process (not yet formally reviewed by the US Food and Drug Administration) uses vaporous hydrogen peroxide based off the original FDA-funded study for the Battelle process that has been approved by the FDA under an Emergency Use Authorization. The face coverings are given to multiple organizations in Lubbock, including Meals on Wheels, City of Lubbock Community Centers, HSC Research Laboratories, American Cancer Society, Lomax Center and Our Lady of Grace Food Drive. The project has resulted in new collaborations and provides for those that are unable to purchase face coverings during this pandemic.

MEETINGS ATTENDED BY GIA COMMUNITY OUTREACH AND EDUCATION STAFF

- ◇ Alzheimer's Association Health and Wellness Conference: "Healthy Living: Pathway to Hope" | Midland | June 2019 | Dr. Ashworth attended the meeting
- ◇ Texas Healthy Communities (THC) Conference | Austin | August 2019 | Mrs. Molinar-Lopez and Boles attended the meeting and presented findings from the THC Grant
- ◇ Caregiver Conference with Area Agency on Aging | Lubbock | August 2019 | Mrs. Blackmon collaborated with Area Agency on Aging and assisted in leading the meeting
- ◇ Texas State Plan for Alzheimer's Disease meeting | Austin | November 2019 | Mrs. Boles attended the meeting

AWARDS

Community Outreach Awards

SPOTLIGHT

Written by Suzanna Cisneros



TTUHSC Garrison Institute on Aging Receives Award

Texas Health and Human Services Announces Innovators in Aging Award Recipients The Texas Tech University Health Sciences Center (TTUHSC) Garrison Institute on Aging received a **2019 Texas Health and Human Services Commission (HHSC) Innovators in Aging award** for its initiative to enhance healthy aging. The Garrison Institute on Aging focuses on research in age-related health issues such as Alzheimer’s disease through education and community outreach programs.

The Innovators in Aging Award recognizes individuals and organizations that are positively impacting the lives of older Texas residents. Award recipients work to improve the quality of life for the growing population of seniors in Texas.

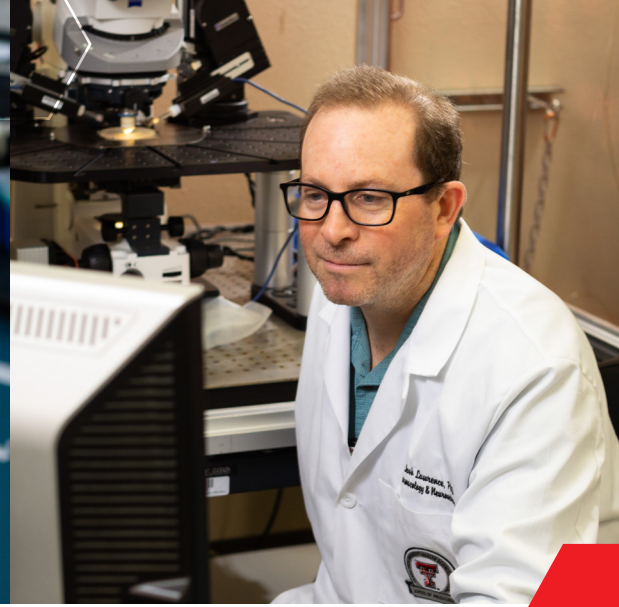
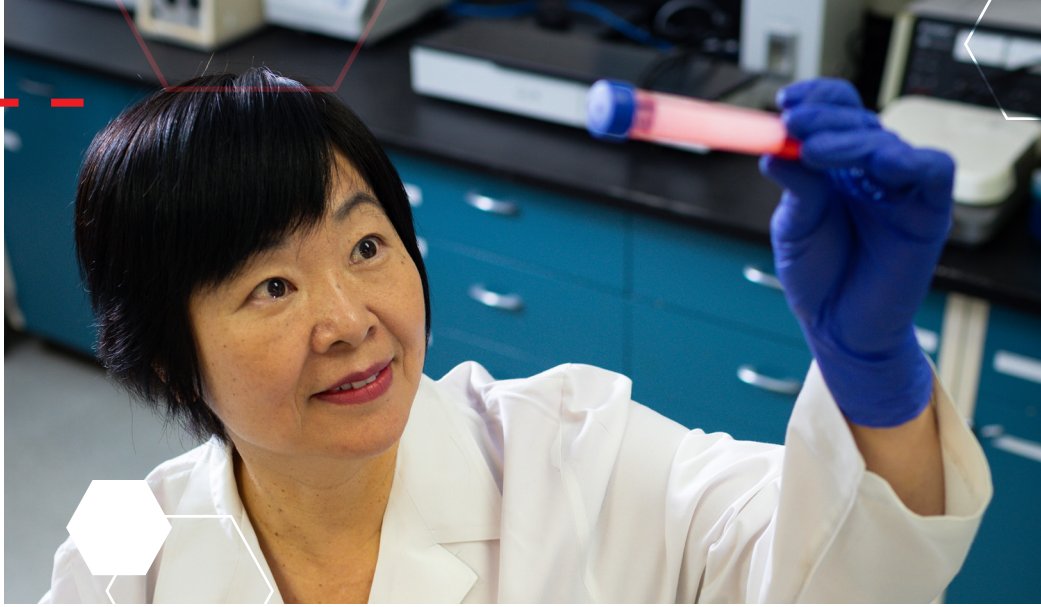
The Garrison Institute on Aging is headed by Volker Neugebauer, M.D., Ph.D., and conducts research, education and community outreach for collaborations to create initiatives. Their vision is to create collaborative initiatives related to healthy aging and aging-related disorders and educate the public with through their research.

“ I am very proud that the Garrison Institute on Aging at TTUHSC received one of the 2019 Innovators in Aging award from the Texas Health and Human Services Commission (HHSC),” Neugebauer said. “Our Community Outreach Team headed by Annette Boles is doing a wonderful job providing education and support for the elderly and their caregivers through various innovative activities such as Retired Senior Volunteer Program (RSVP), Healthy Aging Lecture Series, Care Partner Academy, Chronic Disease Self-Management Program and Healthy Lubbock. ”

Texas HHS Services recognizes organizations which are proactive in creating initiatives and help seniors stay connected, informed and healthy.

“These wonderful initiatives serve the mission of Garrison Institute on Aging to improve healthy aging and aging-related disorders through research, education and community outreach,” Neugebauer said.

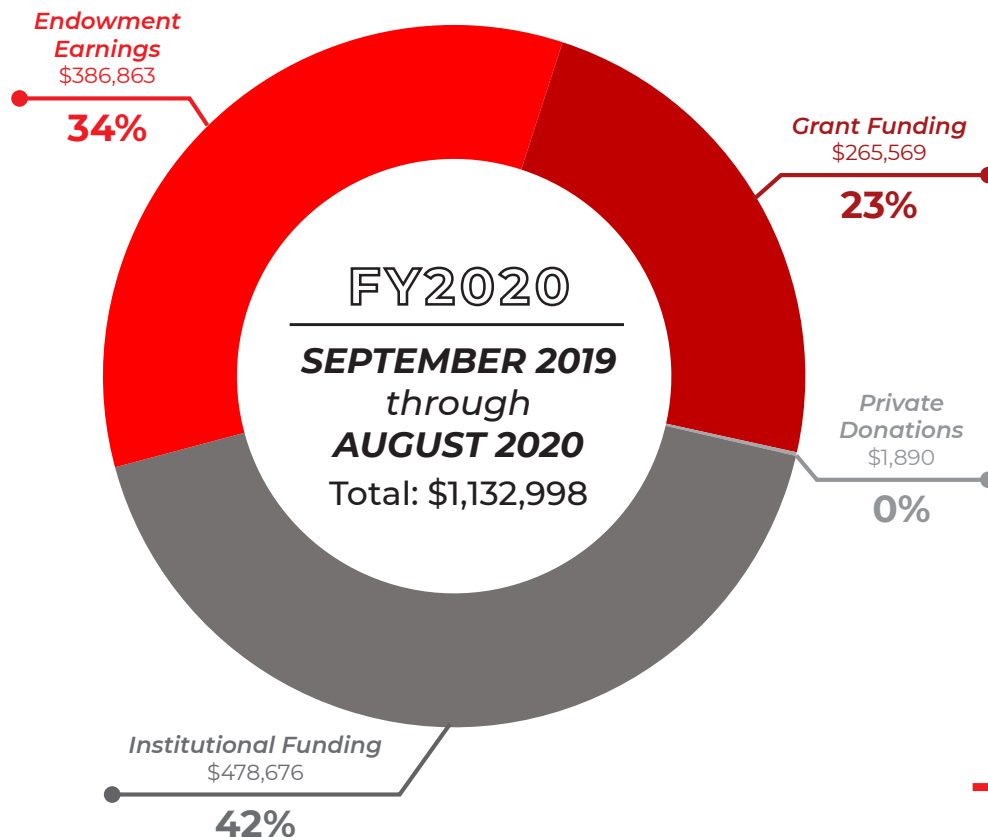




FINANCIALS

Expenses, Income and Grants

The Garrison Institute on Aging (GIA) is funded by a combination of competitive grants, institutional funding, and endowment earnings. The GIA receives support from the Texas Tech University Health Sciences Center Administration to cover operating and personnel costs. Through an endowment provided by the Garrison family, the GIA receives a secure flow of income from earnings on the endowment. While these earnings have decreased, much like the grant funding, due to economic factors and the COVID-19 pandemic, the GIA is committed to enhance current grant funding through: 1) development of new collaborative grant applications, and, 2) hiring a funded senior research faculty member who will establish his/her research program on aging and Alzheimer's Disease and implement GIA-based research and collaborations with faculty and trainees across TTUHSC. Altogether, the funds received by our generous donors are well appreciated and allow the GIA to operate valuable programs, such as the GIA Brain Bank and Care Partner Academy.



Future Goals — — — — — Project Planning

The GIA seeks to explore innovative and significant areas for translational research, employs the Brain Bank and Project FRONTIER for research and education, and continues to expand our community outreach activities. The goals are to: a) generate and disseminate new knowledge about AD and aging-related health issues, b) stimulate collaborations across TTUHSC, and c) seek external funding to support our efforts.

Several research projects are now underway in the GIA and through collaborations across TTUHSC. One project directed by Dr. Maria Manczak is currently funded by NIH. Some projects have resulted in grant applications while others are in the stage of generating supportive preliminary data. In addition to grant applications, publications are being prepared.

To enhance the value of Brain Bank resources, we will continue to develop the electronic database with information from patients' medical records linked to autopsy tissue examination results. Protocols and procedures are being implemented to render brain tissues better suited for molecular and immunocytochemical analyses to test for mechanisms, biomarkers, and targets for AD. We will continue to analyze brain tissues obtained from external brain banks and our own and compare results.

Analysis of blood (serum) samples of patients with and without mild cognitive impairment (MCI) or AD collected through Project FRONTIER for markers to correlate with brain tissue analyses will provide the premise for preclinical research projects. The better understanding of the confluence of biopsychosocial risk factors that impact cognitive progression status is critical to the development of diagnostic or therapeutic strategies for AD. We will continue to collect data for Project FRONTIER and seek collaborations across TTUHSC and TTU.

GIA community outreach programs will continue to educate and improve the quality of life of older adults and caregivers in Lubbock and rural areas by enhancing existing programs while creating new programs to fill gaps in our community. The Care Partner Program and Dementia-Friendly Lubbock Initiative are vital community-based projects. The Care Partner Program offers evidence-based programming aimed at providing mental, emotional, and stress management support for family caregivers to ensure a caregiver's quality of life. This program aligns with a larger community-wide initiative, Dementia-Friendly Lubbock, aimed at educating and raising awareness around AD.

Finally, our overarching goal is to collaborate with local stakeholders to create a West Texas Dementia and Memory Care Hub, which would serve as a central dementia hub for community members from West Texas, the South Plains, and neighboring states. Given the growing older adult population in Lubbock and surrounding communities, a "one-stop-shop" center focused on dementia care is much needed. To fulfill this gap, this project hopes to offer an innovative and interdisciplinary care model to the West Texas area. The program will provide: clinical care for individuals with cognitive impairment, individualized educational and support services for their care giver(s), and a preventive program to delay the onset of dementia among adult children of dementia patients by mitigating risk factors associated with dementia through evidence-based strategies.





TEXAS TECH UNIVERSITY
HEALTH SCIENCES CENTER

Garrison Institute on Aging





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